THE OIL WEEKLY

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The Oil Man's Calendar

SEPT.	
17–18	National Petroleum Association, Wm. Penn Hotel, Pittsburgh.
28–30	American Gas Association, San Francisco.
OCT.	
1– 3	Interstate Oil Compact Commission, Palmer House, Chicago.
2	AIME Regional Meeting, St. Louis.
5– 6	American Gas Association, La Salle Hotel, Chicago.
8–10	Texas Mid-Continent Oil and Gas Association, Dallas, Texas.
12–14	American Society of Mechanical Engineers, Rochester, New York.
14–16	AIME, Petroleum Division, Los Angeles.
19	National Stripper Well Association, Wichita, Kansas.
19–21	Independent Petroleum Association, Wichita, Kansas.
27–29	National Safety Congress and Exposition, Chicago.
29–31	AIME Petroleum Division, Austin, Texas.
30–31	Illinois Mineral Industries Conference, Urbana.
NOV.	
6	California Natural Gasoline Association, Los Angeles.
9–13	American Petroleum Institute, Palmer House, Chicago.
16–18	American Institute of Chemical Engineers, Netherlands Plaza Hotel, Cincinnati.
17–21	National Chemical Exposition, and Industrial Conference, American Chemical Society, Chicago.
DEC.	
2	New Mexico Oil and Gas Association, Artesia Hotel, Artesia.

Contents · September 14, 1942

Volume 107, Number 2

The Changing Panorama.....9

Feature Section:

Washington Roundup.....11
BY B. F. LINZ

Early Nation-wide Gasoline Rationing Is Likely.....13

Business Should Inventory Its Manpower Prospects.....15
BY MAJOR GENERAL LEWIS B. HERSHEY

The Problem of Petroleum Reserves in the United States.17
BY JOHN HENRY MCCAMMON II

Corroded Casing Threatens Arkansas Sour-Gas Fields...32
BY ELTON STERRETT

Applying Bottom-Hole-Pressure Data to Production Problems (Part 3).....40
BY EMORY N. KEMLER

Practical Operating Hints for the Drilling Rig.....50

News Section and Index.....53

Looking Ahead with the Editor.....2

Notes for the Equipment Buyer and User.....71

Squeaks from the Bull Wheel.....70

Index to Advertisers.....72

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The Changing Panorama

Excessive Gasoline May Yet Be Headache

HIGHLIGHTS of recent petroleum economic trends have been the upward swing in crude oil production and runs to stills, which have carried these operations almost back to year-ago levels. With the necessity of manufacturing steadily increasing quantities of essential war products, particularly fuel oil as evidenced by withdrawal from storage of 15¾ million barrels of residual and 5 million barrels of distillate during the past year, both crude oil production and refinery activity should continue rising.

Consequently, the industry's economic position appears materially improved. However, beneath this brighter surface are disturbing elements, especially with respect to the gasoline situation. Recent trends forecast that unless drastic additional adjustments in refinery product yields are made immediately, surplus gasoline may yet prove as severe a headache as was anticipated by the industry early in the year. Now that the Baruch committee has recommended nation-wide gasoline and mileage rationing, the situation demands prompt action.

Complete About Face

There has been an almost complete about-face in the gasoline trend and outlook in recent weeks. Motor fuel inventories were reduced at peak rates in the period between mid-March and mid-August this year, when approximately 27 million barrels were taken from tanks although consumption during the interim declined from a point 5 percent under 1941 to 17 or 18 percent under a year ago. Thus, through extraordinary regulation of gasoline output, inventories of the product were reduced from an all-time peak of 107 million barrels on March 14 this year, which was 8 million barrels greater than the corresponding level a year previous, to 80 million barrels during August, or several million barrels under the 1941 curve—and fears that the product would be made in excessive quantities were dispersed. But with rising crude runs to stills, production of motor gasoline has been climbing in recent weeks. This increase, coupled with continued shrinkage of consumption to levels 20 percent under last year's rate, has checked the decline of stocks. Therefore, in contrast with the favorable situation of the preceding several months, gasoline stocks currently have returned to a parity with 1941.

In view of probable enlarged future runs to stills and certain continued decline in consumption, the outlook is not encouraging. If nation-wide rationing is effected, an abrupt and drastic dip in consumption will result, making the current rather dismal prospects quite sickly. Only marked additional adjustments in refinery yields that will increase distillate and residual fuel supplies at the expense of gasoline production offer any solution to the problem.

Fortunately, the Petroleum Industry War Council has shown it already is cognizant of the situation, and at its meeting September 1 urged adoption of broad scale additional refinery yield adjustments. Refiners have done an amazing job of changing product yields, and there is some question of how much farther they can go. However, PIWC apparently thinks additional adjustments can be made in the right direction. Of help in this connection is the OPC plan for converting all refineries to manufacture of war products. But immediate action is required before the situation gets out of hand.

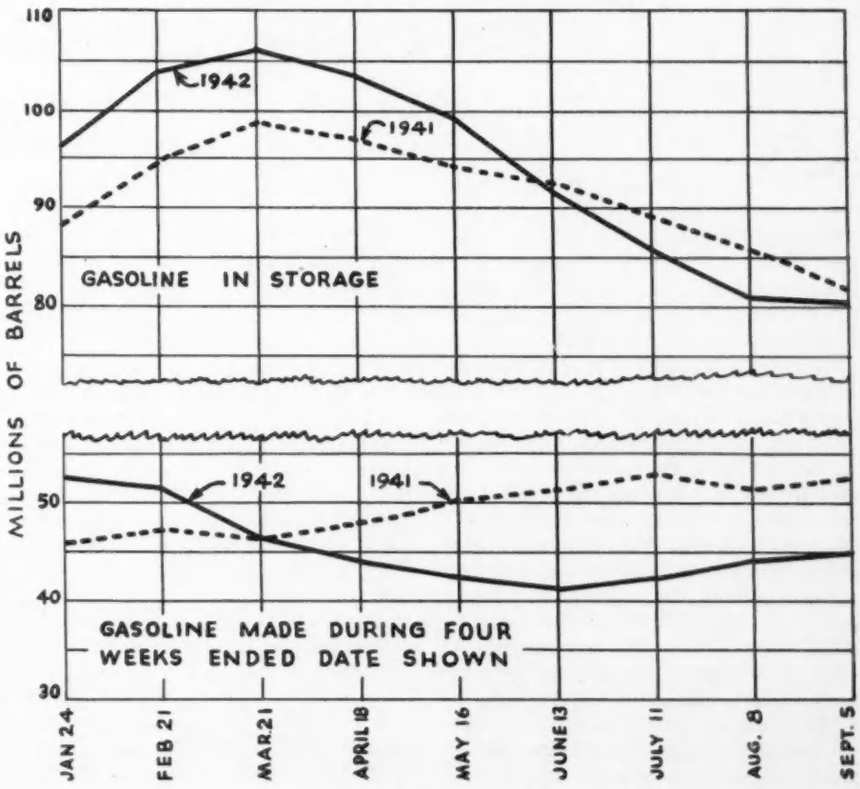
East Coast Shipments Help Railroad Income

DUE to the emergency movement of crude oil and petroleum products to the East Coast, railroad freight revenues from the industry were 55 percent higher during the first three months of 1942 than in the corresponding period of 1941.

Total carload revenues from crude oil and petroleum products in the first quarter of 1942 amounted to $80,722,729, or more than 14 percent of all railroad freight revenues, according to the Interstate Commerce Commission. This compares with first-quarter 1941 receipts of $52,188,209 from petroleum.

The greatest increase was in the movement of crude oil, revenue from which jumped from $1,957,145 in the first three months of 1941 to $13,015,991 in 1942. Every classification of petroleum products, however, contributed to the increase in railroad revenues. Light petroleum products, including gasoline, paid more than $35,000,000 against $29,000,000 last year; fuel oils, almost $19,000,000 compared with $12,400,000; lu-

Gasoline Trends Being Reversed



bricants, $9,900,000 against $5,500,000.

That the increase is due to enlarged shipments to the East Coast is obvious. The importance of this factor, however, is shown by the fact that 1941 first quarter revenues from crude oil alone in the Eastern District amounted to but $302,647 while in 1942 they totaled $7,095,587.

Since the railroad movement of petroleum to the East Coast has increased tremendously since the first quarter, and is still growing, currently freight revenues have jumped to levels even much farther above 1941 rates. Daily deliveries via tank car to the East Coast during the first quarter of 1941 averaged about 275,000 barrels per day, whereas today they are above 800,000 barrels daily.

Freeze Funds for Highways Later

THE American Petroleum Industries Committee has issued an illustrated bulletin suggesting adoption of constitutional amendments for protecting through the war period the highway funds that will not be used because of stoppage of road construction. Out of reduced highway tax income must be met payments on road bonds and expenses of highway administration and maintenance. But lack of new road construction will build up surplus highway funds, which need to be saved to carry out the delayed road building after the war is over. Such post-war highway work will materially help to provide post-war employment, as road construction employs more men for the money expended than any other form of major constructive work.

950,000 Tons of Buna Rubber by Next Fall

BUNA rubber at the rate of 950,000 tons per year will be in production by November 1, 1943, according to figures made public at the meeting of the American Chemical Society in Buffalo, September 9, by Dr. Albert L. Elder of the War Production Board. His total includes output of one Canadian plant. It was based on estimated output of butadiene at the rate of 717,800 tons per year.

Not included is Butyl rubber output of 130,000 tons per year, neoprene at 40,000 tons per year and Thiokol at 30,000 tons per year.

Butadiene production at this rate is substantially higher than the previous figure, 648,000 tons. Recently methods of manufacture have been simplified to permit smaller plants to participate. The WPB authority, however, said only 12 companies would participate.

P-98 Expires Again

WITH the extended P-98 order due to expire this week OPC and WPB officials are working on the modified production-requirements plan which is to be substituted for the present system of priorities.

The order will expire September 15; but it is unlikely that the new regulations will be promulgated in advance of that time and, in fact, it is probable that they will not receive final approval before the end of the week.

It was planned originally to put the new system into effect when the last expiration of P-98 occurred on August 1, but OPC and WPB were unable to agree on several phases of the proposed order. Most of those difficulties now have been ironed out, it is understood, but the two agencies still have some points to clear up.

Due to mass production of a new type of auxiliary gasoline tank, carried on the outside of the plane and designed so it may be dropped after the fuel supply is consumed, American bombing planes are to have much greater flying range.

The President's Message

By RAY L. DUDLEY, Publisher

The low state of public estimation into which the Congress has sunk is amply indicated by the message of President Roosevelt on Labor Day. That the Chief Executive of the nation would presume to threaten the Congress with the assumption on his own part of powers ordinarily credited only to a dictator, or made possible in these United States only under martial law, could only come if the Chief Executive felt that he would be backed up by the people.

Of such situations dictatorships are born.

We believe that the people of the United States are in full agreement with the President that favoritism to any class or group should be eliminated. We believe that the people of the nation, including farmers, do not favor continuation of the 110 percent above parity on farm products which the short-sighted farm bloc has imposed upon the country. We believe that the people of the nation favor, at the same time, the freezing of wages, because freezing of farm products at a fixed level would accomplish nothing unless wages are frozen as well.

But we believe that the people of the United States want these emergency measures provided for and carried out in a legal manner. We have been so impressed by what the totalitarian nations have accomplished in waging war, that if we do not watch ourselves, we may be willing to accept other precepts and examples from the dictators' notebooks which are contrary to the very principle for which we are fighting.

Congress has only itself to thank for the plight in which it now finds itself. It may go against the grain for some members of Congress to knuckle under, as they may term it, to the big stick of the President, but if they are wise they will resume the responsibilities and duties laid out for the Congress, transacting their business as statesmen and patriots, rather than as rubber stamps and partisan politicians.

If the Congress freezes farm prices it should freeze wages as well—and at the same time. Members of Congress should not do just the one and leave the responsibility of the other to the President.

We hope that our Congress will do its duty because it should do it, rather than because it is threatened, and in that way regain the respect of the people.

WASHINGTON ROUNDUP

By B. F. LINZ
Washington Correspondent

Baruch Report Likely to Bring National Gasoline Rationing

OPA Prepares for Rationing of Fuel Oil by Expansion

East Texas Salt Water Project Gets WPB Approval

Ickes Denies He Will Resign as Petroleum Coordinator

IN A report strongly condemnatory of the manner in which the administration's rubber problems have been handled, the Baruch committee last week submitted to President Roosevelt recommendations for nation-wide rationing of gasoline as a rubber-conservation measure and for expansion of the synthetic-rubber program to 1,100,000 tons a year. Assurance by the President that he would put the recommendations of the committee into effect, made nation-wide gasoline rationing probable as quickly as OPA can develop the machinery. (Story page 13.)

Although gasoline rationing already is imposed on the East Coast area and voluntary restrictions have cut consumption elsewhere, nation-wide rationing was seen as bringing about an abrupt and sharp reduction in use of motor fuel. Some sources predicted a 20 to 30 percent decline would result. Thus the petroleum industry faces prospects calling for further drastic curtailment of gasoline production, already a serious problem in view of the necessity for refineries continuing to manufacture large quantities of fuel oils and other products whose consumption has been increased materially by the war effort. Encouraging to the industry were suggestions that rubber be provided to keep civilian automobiles on the road, creating prospects that once the shock of rationing curtailment was felt consumption of gasoline might continue at a more steady rate through 1943 and 1944 than many have anticipated heretofore.

Meanwhile, OPA was preparing for rationing of fuel oil in the Eastern States and probably in some parts of the Midwest where shortages are expected as a result of the diversion of tank cars. An order now in effect, suspending fuel oil deliveries for heating or cooking will expire September 15, at which time another order is expected restricting deliveries until coupon rationing can be put into effect, probably a month later.

Also due within a few days is a new order from WPB to supplant P-98 with a modified form of production requirements plan which has been in the mill for many weeks. The present order will expire September 15, but whether its substitute will be ready for promulgation is problematical, and the industry may face another period of trying to obtain development and operating equipment without priority preference ratings.

The submission of the Baruch committee rubber report marked a short week otherwise quiet except for a quickly-denied report that Harold L. Ickes had submitted his resignation as oil coordinator, although there were indications that he might be willing to throw in his hand unless given more complete authority to direct industry operations to achieve a maximum contribution to the war effort.

That authority now is seen as likely to be granted by the President, on the basis of the rubber report recommendations that administration of the production of rubber from oil and its products be centralized.

FUEL OIL RATIONING: Anticipating the imposition of fuel-oil rationing in the Eastern States and possible extension of the rationed area to the Middle West, Price Administrator Leon Henderson last week reorganized the fuel-rationing branch of OPA.

Expanding the branch to a separate division, Henderson retained Joel Dean as its director, with Wallace S. Sayre, former chief of the operations section of the branch, as assistant.

The division will have three operating branches, a gasoline-rationing branch under John R. Richards, formerly associate chief of the fuel rationing branch; a fuel-oil rationing branch under John G. Neukom, and an industry-relations branch under Paul R. Baugh, formerly oil-account executive with the advertising agency of Erwin, Wasey & Company, New York.

Only a decision as to whether fuel-oil rationing is to apply to areas outside of District 1 is needed to set in motion machinery already set up and a program which has received the approval of all of the agencies involved.

An educational campaign to acquaint the public in the shortage areas with the need for and extent of rationing, involving the use of radio and motion pictures, as well as the press, has been worked out for some time and been put into written form for guidance of officials.

As now proposed, rationing will cover Nos. 1, 2, 3 and 4 light heating oils, diesel fuel and kerosine for all purposes. The heating season will be divided into six periods of approximately equal "degree" days in all areas except the far South, where there will be only five periods, and ration books will be "tailored" by periods, with a view to providing householders with sufficient oil to permit a constant temperature of 65 degrees, with higher temperatures for homes in which there are young, old or ill persons and hospitals.

Just how far to the west it may be necessary to extend rationing has not been decided, but the prepared plan contemplates its extension to all areas which have been stripped of railroad tank cars.

"As yet, of course, we have no actual deficit of oil," it was explained. "No war production plant has been forced to close down, nor has any airplane in the Interceptor Command been grounded for lack of gasoline. The petroleum shortage exists today in terms of low reserves. In the East the reserves are dangerously low. Here the amount of fuel and heating oils in storage is only one half of what it was a year ago. Even in the Midwest the reserves of oil are lower than they were a year ago. The concern of the government is to prevent this shortage in reserves from developing into an actual deficit—as it inevitably will unless something is done. A fuel deficit would mean desperate

choices among equally unpleasant options — shutdowns of war production plants, inadequate supplies for the armed forces, or cold homes."

Now, more than ever, it was asserted, every effort must be made to build up reserves. "Wartime conditions, which drained these reserves to such low levels, may interfere again with current shipments," it was warned.

"To sum up the situation, briefly, the Eastern Seaboard and the sections bordering it on the west face a home-heating-oil shortage this winter. The extent of this shortage depends on the severity of the coming winter, the conversion of oil-burning equipment to coal—the conservation of fuel in the rationed area, and the willingness of the rest of the country to share in fuel conservation, thus releasing transportation facilities to carry fuel oil to war plants in areas where oil becomes critically short."

Possibilities that restriction of coal and gas consumption may follow the rationing of oil were raised by the assertion that all types of fuel and power must be saved. Last year, 102,000,000 tons of coal, 115,000,000 barrels of oil and 212,745,000 million cubic feet of gas were consumed in American homes; potential savings, it was said, amount to 25,500,000 tons of coal, 19,166,000 barrels of oil and 21,274,500 million cubic feet of gas.

Curtailment of oil for East Coast householders may not be quite as severe as 25 percent, Coordinator Ickes told a special House committee September 9, but made it emphatic that there was no guarantee that the shortage will not be as great as has been estimated.

Ickes told the committee, composed of Eastern congressmen, that the OPC was taking all the tank cars it could find, regardless of the effect of such action on other areas of the country.

While there is some hope that the situation may prove to be better than originally feared, Ickes emphasized that "we can't guarantee it" and expressed the belief that it is "unmerciful to raise false hopes." Much depends, he indicated, on military demands, which must take precedence over domestic requirements.

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TANK CARS: Revision of the tank-car-permit system, effective October 10, to prohibit use of cars of a capacity of less than 7000 gallons for transportation into the Eastern States, was ordered by Transportation Director Joseph B. Eastman, September 7.

The new set-up will reserve the smaller cars for hauls of 200 miles or less, for which cars of more than 7000 gallons capacity will be prohibited.

Present orders, in effect since June 1, ban the use of tank cars for movements of 100 miles or less and have resulted in the release of approximately 8000 cars for longer hauls, it was said.

Extension of the system to cover hauls up to 200 miles, plus the shifting of cars to force the larger ones into long-haul service and the smaller ones into permitted shorter movements, will further step up the flow of products into the seaboard area.

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ODT: All movement of petroleum and petroleum products by domestic waterway craft is now under wartime control of the Office of Defense Transportation through the provisions of general order ODT No. 19, which became effective September 10. The order gives the ODT authority to direct the movements of any vessel capable of carrying liquid cargo in bulk, including authority to specify the points at which such cargo is loaded or unloaded.

Current with the general order, a suspension order also took effect which exempts carriers of oil moving in a northerly and easterly direction from the necessity of obtaining permits as provided by the general order. The order requires that ODT permits be obtained before any vessel may move under load against the direction of the desired flow.

The general order's provisions do not apply to: (a) nationals of a friendly nation whose vessels are not documented under the laws of the United States; (b) transportation of government property; (c) vessels owned or controlled by the government except those owned or controlled by governmental corporations.

☆

NO RESIGNATION: OPC officials on September 10 denied reports from New York that Ickes had submitted his resignation as oil coordinator to President Roosevelt.

The resignation was reported by Clyde G. Morrill, secretary of the Atlantic Coast Oil Association's conference, as having been disclosed by Dr. John W. Frey, assistant to Davies. Morrill said also that Ickes had indicated a week earlier that he would resign unless given more authority. Dr. Frey was reported as denying that he had made any statement regarding his chief's actions.

At the same time, it was recalled that Ickes had lashed out at "shot-gun" methods of administration at his press conference a week earlier, and had reiterated his belief that one-man administration was the preferable way of dealing with the oil problem.

With control of the oil industry split several ways, with WPB, OPA, ODT and other agencies all having something to say, the path of the coordinator has been difficult and marked by frequent clashes with Nelson and Henderson over the treatment to be accorded the industry.

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EAST TEXAS: A $500,000 project to maintain bottom-hole pressure in the East Texas field, by reinjection in the Woodbine sand of water produced with the oil, was given the green light September 10 in an announcement by OPC that the WPB has granted priorities which will assure the procurement of the necessary materials. The WPB grant will cover the first unit of a com-

[*Continued on page 46*]

Committee Approves Intangible Drilling Costs

Seeking to complete its work on the new tax bill, the Senate Finance Committee on September 11 rejected by a vote of twelve to six a treasury recommendation to eliminate the deduction for intangible drilling costs now allowed oil and gas operators.

Supported by Colin F. Stam, chief of staff of the joint committee on Internal Revenue Taxation, the treasury had represented the deduction as part of a "double deduction" the other part of which was the 27½ percent depletion allowance.

Proposing that operators be required to apply intangible drilling cost against the depletion deduction, treasury experts told the committee an additional $100,000,000 could be secured. While the committee has refused to disturb the present deduction provisions of the law, there are indications that another effort to secure a change will be made when the bill reaches the floor, although it is not expected that it will have any success, particularly in view of the refusal of the House to adopt the treasury recommendations for the elimination of the depletion allowance.

Early Nationwide Rationing Of Gasoline Likely

NATIONWIDE rationing of gasoline as a rubber conservation measure, but release to civilians of enough rubber to keep all automobiles on the road, was recommended to President Roosevelt September 10 by his special rubber committee, in a report which also urged expansion of the rubber program to 1,100,000 tons a year.

The President, as he forwarded copies to Congress, said the recommendations would be put into effect as "rapidly as arrangements can be made." On the thesis that the only choice is between "discomfort and defeat," the committee told Roosevelt bluntly that there is no middle road toward solution of the rubber problem, that there has been too much division of authority and conflict between agencies and that prompt action is necessary to avoid a serious deficit in rubber supplies that would result in chaos.

"We find the existing situation to be so dangerous that unless corrective measures are taken immediately this country will face both a military and civilian collapse," the committee asserted. "The naked facts present a warning that dare not be ignored."

Nowhere in its report did the group evade cold facts or attempt to mitigate the severity of its criticism. Appointed by the President August 6, the three men—Bernard M. Baruch, head of the War Industries Board in 1917; Dr. James B. Conant, president of Harvard University; and Dr. Karl T. Compton, president of Massachusetts Institute of Technology—spent a full month in deep analysis of the situation. They took to the White House a report which said bluntly that "only actual needs, not fancy wants, can, or should, be satisfied, to dissipate our stocks of rubber is to destroy one of our chief weapons of war. We have the choice—discomfort or defeat. There is no middle course."

The committee's survey showed that total crude rubber available between last July 1 and January 1, 1944, would be 631,000 tons against which there would be military and other essential demands for 842,000 tons—with no allowance for tires for civilians—leaving a deficit of 211,000 tons which must be met by synthetic production before the end of next year.

The report, however, outlined a synthetic rubber program which, it said, if fulfilled with reasonable expectancy, might make it possible to ease up on rubber conservation through gasoline rationing before the end of 1943.

Rationing Program

But it was made clear that, in the view of the committee, any relaxation of rationing before then would be a "service to the enemy." The committee's rubber-conservation program, also outlined in the report, is expected to be put into effect quickly by the President. The steps called for in this section of the report included:

(1) Limitation of speed of all motor vehicles to 35 miles per hour, estimated to prolong the life of tires by nearly 40 percent.

(2) Restriction of car driving to "necessary" mileage, not to be in excess of 5000 miles a year.

(3) Release of rubber for recapping of old tires or provision of new ones, to maintain necessary civilian driving.

(4) Imposition of a gasoline rationing system on a national basis, providing for necessary mileage of 5000 miles a year.

(5) Institution of compulsory periodic tire inspections.

(6) Adoption of a voluntary tire conservation program until rationing can be put into effect.

Synthetic Rubber Program

The seven-point synthetic rubber program recommended in the report called for:

(1) No further substitutions in present plans.

(2) Immediate authorization of an additional 140,000 tons of Buna-S rubber production this year.

(3) Immediate institution of a refinery conversion program to yield 100,000 tons more of butadiene.

(4) Immediate adjustment in rates of construction of present styrene and polymerization plants to promote maximum production of Buna-S in 1943.

(5) Construction of another plant to make 20,000 tons of neoprene annually.

(6) Erection of a 27,000-ton butadiene plant to utilize grain and an associated polymerization plant to produce 30,000 tons of Buna-S to be located near the center of grain production.

(7) Immediate erection of plants to produce 100,000,000 gallons of alcohol yearly by use of recently developed apparatus, to be located near grain producing areas and at points where water transportation is available.

It was pointed out that an increase of 100,000 tons in butadiene output would make available an additional 40,000 to 50,000 tons of rubber in 1943. This additional output would be provided under the refinery conversion plan worked out by OPC but which WPB officials recently said would be of little value because of the lack of plant capacity for its conversion into rubber.

Criticizes Past Efforts

The committee minced no words in its condemnation of the way in which the rubber problem has been handled, and said its recommendations were an effort to develop a basis upon which "the entire nation can go forward together uniting our energies against the enemy instead of dissipating them in domestic wrangling."

It is necessary now to ask the people to make sacrifices because of mistakes that have been made, it was declared.

Specifically, the committee criticized the failure of "responsible officials" to request Russia's aid in setting up a synthetic program, an omission, it commented, "for which we have not had a satisfactory explanation.

The primary need, it was indicated, is a complete reorganization and consolidation of agencies concerned with the rubber program. All agencies should be required by the President to act under the direction of WPB Chairman Donald Nelson who, in turn, should delegate full and complete authority in all rubber matters to a rubber administrator, it was recommended, with the comment that the present administrative organization is not such as to assure the effective carrying through of the program.

"In answering the questions of how much rubber do we have and where are we going to get more, the country is dependent, finally, upon the production of synthetic rubber, which, it is

hoped, will reach its full swing in 1944," the report said.

"Why not earlier? Why so late? The answers to these queries lie in the past. These errors, growing out of procrastinations, indecisions, conflict of authority, clashes of personalities, lack of understanding, delays and early non-use of known alcohol processes, are not to be recounted by us, nor shall we go into the failure to build a greater stockpile of crude rubber. We are concerned with the past record only in so far as it has seemed to us to cast light on problems of future administrations.

"To prevent a recurrence of these mistakes, this committee asks an immediate reorganization in present method and the creation of a rubber administrator. This official will have authority over the policies governing the priceless stock of rubber now on our automobiles, the drivers of which are trustees of our national safety. He will direct the course of the technical and industrial development—wholly new to America—of the synthetic rubber production. If our hopes are realized, the production of Buna-S and neoprene (the two synthetic materials on which we now rely most to replace crude rubber) will total 425,000 tons by the end of 1943. But on the other hand, the figure might easily fall to less than half that amount if delays occur—delays of as little as 120 days. 'Bugs' may be found on plant construction or in the operation of any one of the three processes used in the manufacture of Buna-S.

"With 425,000 tons we should have a margin of safety, a slight one, to be sure, perhaps 100,000 tons above necessary inventories for ourselves and our allies—for the front. With only 200,000 tons of Buna-S produced, our supplies would be exhausted. The successful operation of our mechanized army would be jeopardized.

"We cannot afford to take a chance. It is better to be safe than to be sorry. We dare not depend upon unbuilt plants; upon increasing the reclamation of scrap; upon bringing the tire manufacturing capacity up to equal a theoretical synthetic production; upon other unproven factors."

The committee expressed "full facts" in the ability of American industry "to lick all these problems," but referred to the grave uncertainty of time available and pointed out that "We cannot build military offensives on rubber we do not have."

The report recommended the stepping up of reclaiming operations to the fullest capacity and a 20 percent expansion of reclaiming facilities pointing out that the accumulation of huge scrap piles is an unnecessary fire and sabotage hazard which gives the committee much concern.

Reclaimed rubber, a small amount of crude and an increased supply of Thiokol or other substitutes was recommended for civilian tires and retreads.

"When it comes to rubber, we are a have-not nation," it was commented. "If we are to err it must be on the side of sterner curtailment and conservation to anticipate the worst dangers that the war may bring."

Thus it will be possible only to provide rubber for essential driving, a step which the committee expressed confidence would be accepted without demur by the public.

In its recommendations for concentration of administration in one agency, the committee recommended that the Petroleum Coordinator be directed by Presidential order:

"To act on specific directives from the rubber administrator to explore all methods for the production of butadiene from petroleum and natural gas products and to recommend a new proposal to the rubber administrator for consideration and action. However, to make certain there are no construction delays because of conflicting authority and the construction of all plants and equipment concerned with the produc-

[*Continued on page 47*]

Gasoline Rationing Spread May Not Reduce Consumption Severely

EFFECT of nation-wide gasoline rationing upon the oil industry cannot be accurately calculated because of numerous varying factors. However, while it appeared certain that imposition of rationing would result in abrupt further reductions in gasoline use, which in turn would intensify materially the industry's already severe financial and refinery-output adjustment burdens, there were indications that the drop in consumption might not be as severe as first indicated. Moreover, the industry can take encouragement from the increased possibility that rubber may be released to maintain necessary civilian driving, as recommended by the Baruch committee to prevent military and civilian collapse. It may be that whereas the first few months of rationing will result in a sharp consumption reduction, thereafter, say within a year, the rate of consumption might actually be greater than if cars were permitted to wear out their rubber and be removed from the road.

A number of factors indicate that nation-wide gasoline rationing may not influence the use of this product as severely as might be first thought. Trucks and buses, which consumed 23.5 percent of the fuel used by all motor vehicles in 1941, are likely to be exempt from any stringent restrictions. Rationing already has been applied in the East Coast, where 35 percent of the gasoline is consumed, and 33 percent of the passenger cars are located. Furthermore, motorists throughout the country have curbed driving considerably. Then some occupations, such as physicians and others, will be exempt from the regulations. Therefore, nation-wide rationing will apply to only an additional portion of the gasoline consumers. Meanwhile, the use of gasoline by military forces, which necessarily is a secret figure, has been increasing sharply and will continue to gain.

Including the unknown number of passenger cars that may obtain exemptions and all those that may have gone off the road during 1942, nation-wide gasoline rationing will apply to 19½ million additional passenger cars located outside of the Atlantic Seaboard area. At 5000 miles each, these cars could still travel a total of 97½ billion miles annually. In doing this they probably will consume 6½ billion gallons of gasoline. In 1941, according to the American Automobile Association, the "average United States car" was driven 8,186 miles. On this basis, these 19½ million autos that now face rationing, probably traveled 159½ billion miles and in doing so consumed something like 10½ billion gallons of gasoline. Therefore, the loss in vehicle gasoline consumption from the 1941 rate apparently will not exceed 4 billion gallons, a reduction of 17 percent, and this is not allowing anything for voluntary driving restrictions motorists have imposed on themselves. Neither does it consider enlarged military uses and other factors.

The 5000 miles-per-year restriction will permit the average American motorist to conduct his essential driving, although some of course will be hurt. The American Automobile Association records show that the average car during 1941 while driving 8186 miles, was used 4479 miles, or 55 percent, for essential purposes, such as to work, business trips, shopping, hauling, to school or church.

Business Should Inventory Its Manpower Prospects Immediately

By MAJOR GENERAL LEWIS B. HERSHEY
U. S. A. Director of Selective Service

Major General Lewis B. Hershey

MANPOWER is a most important strategic material of today. Every employer should make a prompt inventory, appraisal and analysis of the manpower in his own organization as he would inventory his stock pile. In order to keep production going and at the same time furnish men for the armed forces, industry should now establish an orderly replacement program.

In order to secure temporary deferments for essential men while he is training women, young men, older men, men physically handicapped or those with a high degree of dependency, the employer should know the fundamental principles in the operation of his local Selective Service Board. Certain steps should now be taken by each employer. He should know how many men on his pay roll are between the ages of 20 and 45. He should investigate the classification of every one of those men. On the basis of such an inventory he should prepare to plan ahead and train men for replacement of those who must necessarily enter the armed forces if we are to have the sort of army which can win the war.

Deferments Temporary

Deferments, granted so that employers may train those not liable to early induction, are temporary deferments; they cannot exceed 6 months and in many cases may be for only 30, 60 or 90 days. The Army today has to train a bomber pilot within a period of 8 months to operate a very technical machine with an instrument board which puzzles an expert. Why, therefore, should industry insist that it assume that it can take two or three years to

Industry Advised to Plan Now for Serious Manpower Replacement Problem as Military Needs Increase

NOTHING can outrank the fighting front in importance, but care must be exercised in this mechanical war that the industrial front is not so robbed of its essential manpower as to make impossible the delivery of necessary machinery and supplies to properly equip the fighting men. Since military manpower needs are certain to increase further, industry must anticipate additional losses. With industry, including oil, already having furnished a large number of men to the armed forces of the nation, this problem of properly maintaining personnel on all fronts has become acute in recent months and will become more so in the future. Therefore, the accompanying article by General Hershey, director of Selective Service, is especially timely. It explains how a business man should go about taking an inventory of his manpower, replacing drafted men, and asking deferment for his key men where necessary.

Already the War Manpower Commission has approved certain occupations in petroleum and allied industries as essential to the support of the war effort (The Oil Weekly, August 24, 1942, page 35). Draft deferments for a six-month period, so replacements may be trained, can now be asked by the petroleum industry on men employed in the listed activities.

train men for industrial tasks not nearly so complicated?

The fundamental purpose of every deferment of a registrant is to allow an employer to train a replacement. Only in a few rare instances can an employer expect to have these temporary deferments continued for more than the six months period. These are only in cases where an abnormally long period of training is required for a replacement and the eight months needed in which a bomber pilot can be turned out now, is something to remember in this connection.

Employer's Responsibility

Employers may seek the deferment of their necessary men with or without their consent.

Here is how they go about it.

On page 3 of the Selective Service Questionnaire (Form 40) which is sent to each registrant before he is classified is the following:

Instructions—If your employer believes that you are a necessary man in a necessary occupation, it is his duty to fill out Form 42A requesting your deferment. You may also attach to this page any further statement by yourself which you think the local board should consider in determining your classification. Such statement will then become a part of the questionnaire.

This is on all the questionnaires distributed during the past six months. The fact that the Selective Service System now specifically mentions the filing of Form 42A as the manufacturers' duty is a clear indication of the Selective Service System view on the responsibility of each employer in this matter.

The employer can secure Form 42A at the local board and the local board will consider the employer's request when the form is properly filled out and signed.

If such request should be denied because the man, after consideration of the claims offered for him, is not considered to be indispensable to the company's operation, and is needed more in the armed services, the local board will advise the employer of its refusal of such an occupational deferment.

The local board does this by sending to the employer, at the same time it notifies the registrant of his classification, a Form 59.

May Make Appeal

There are 10 days after Form 59 is mailed by the local board to the employer during which the employer can appeal the registrant's case.

The registrant will not be ordered to report for induction during this 10-day period.

In order to take an appeal the employer simply has to sign his name to Form 59 which he has received, and return it to the local board; or in case the Form 59 is not received from the local board, any written request will have full value to make such an appeal effective.

When Form 59 is returned by the employer the appeal procedure becomes automatic.

All necessary forms are available at the local board in the employer's immediate vicinity or at the office of the State Director of Selective Service.

If the local board and the appeal board deny the appeal for the occupational deferment of a key man, the employer may then bring the matter to the attention of the State Director at the State Selective Service Headquarters, with the request that the case be reopened or appealed by him to the President.

Definite Duty

A double duty rests upon the employer. He should personally know what his manpower situation is. He should not leave the job to a minor employe to decide who is necessary. The employer who delegates the task of filing a request for deferment to a clerk, the executive who does not make a complete inventory of his whole force today, is negligent. Likewise, the employer who files requests for deferment of men who can be replaced by others, is keeping reinforcements out of an Army which is battling for us all. The employer engaged in essential war production who has been required to greatly expand his output and who then fails to request deferment for his key men is also negligent.

A good rule to follow: Don't ask deferments for any men who can be replaced by training another individual not likely to be eligible soon for service in the armed forces.

Make an inventory, request deferment for any man whose immediate going into the armed services would retard production of vital war material or other services essential to the war effort.

Only when an employe is working in a critical occupation within an essential industry should a Form 42A be filed for his temporary occupational deferment.

Make Replacements

Yes, an inventory within a man's own organization is called for; also an appraisal and analysis of the manpower in the community. There is many a man over 45, or a man physically handicapped who can do that job that the 23-year-old boy is doing who took a 12-weeks course at a learn-quick school.

There are not more than 60,000,000 people in this country who are capable of effective productive effort. These men and women represent our total manpower available to win the war. They must do everything that must be done in a total war; maintain transportation, communications and utility systems, maintain public services, grow food for ourselves and our allies, mine the metals and produce the raw materials, fabricate and produce the amount of consumers goods necessary to maintain even a restricted national life and the supplies, weapons and munitions of war; also most of all they must provide the men who land on strange shores in far places, the men who carry the fight to the enemy on a multitude of far-flung frontiers. The rest of the population who mine raw materials and produce the weapons with which these men fight must be a self-disciplined team working in unity. The individual personal convenience, comfort or pleasure, or the convenience and ordinary leisurely replacement programs of the employer, will have to be given progressively less consideration as the war gets tougher and the casualty lists grow.

When we hear of the big armies we are going to raise, we must all remember that it takes at least five men or women to produce what they eat, use, fight with, and wear. With less than 60,000,000 availables in this country, those figures are worth deep consideration.

The Problem of Petroleum Reserves in the United States

PART 1

By JOHN HENRY McCAMMON II

THE amount of petroleum, either produced or in reserve, is not simply a certain number of barrels, but is a measure of raw material and its relation to similar raw materials for all of which there are many uses both multiple and single. The demand for petroleum products has paralleled the rapid expansion in use of the automobile and airplane and a further increase in consumption is certain in order to supply a chemical industry aware of the vast number of possible combinations of readily altered hydrocarbons. The supply, however, is not synchronized in scale or direction with demand. An examination of discovery effort and rate indicates:

1. The high degree of perfection of exploratory tools which are finding more but smaller fields;

2. That a peak in the number of barrels found per year was reached more than a decade ago;

3. That no promising major unexplored reserve areas remain in the three principal petroleum producing states; and

4. That no nationally important increase in reserve will come from deeper horizons in Texas, Oklahoma and California, which are a representative cross section of the optimum petroliferous area of the United States.

In short, petroleum, despite periods of abundance in the past, now reveals its essential nature, which is that of a mineral. Like other minerals it occurs in commercial quantities in only certain areas of the earth, and this amount[1] should be measured in terms of its relation to other hydrocarbon sources and to the uses to which they may be put singly or interchangeably.

Large Percent in Big Fields

The American Petroleum Institute estimate of the proved petroleum reserve of the United States on January 1, 1942, was 19,589,296,000[2] barrels. Geographically this reserve exists in the several thousand oil fields of the 23 productive states. Yet the combined reserve of only 17 fields accounts for 43 percent of the national total, as Table 1 shows. Singly, the East Texas field accounts for 15.6 percent of the national backlog.

Statistically, the magnitude of these large fields, and in fact, of the whole reserve picture, is meaningless unless compared to the rate at which we are producing petroleum and creating uses for it. The Indian once possessed all the petroleum that will ever be found in the United States, but this resource served only his medicinal needs. Similarly, the significance of petroleum reserves was quite different during the lamp and lubricating-oil period (1859-1900)[3] than it is now when functionally it alone supplies almost a third of our mechanical energy[4] and serves as the raw material of a long list of products varying widely from soapless soap through explosives to synthetic rubber.

The importance of petroleum, like that of any fund resource limited in amount by geological conditions, is directly proportional to the demand technologically created at a certain time.

Discovery of increasingly larger oil fields, climaxed in 1930 by the East Texas field, should not obscure the fact that petroleum is a fund resource, whereas the increasing demand established by both old and new uses is, as yet, without an upper limit. As Snider has clearly pointed out[5], Bradford, Salt Creek, Coalinga and Midway-Sunset, all producing 42 to 67 years ago, were of far greater importance at the time of their discovery than any field since. Bradford had a "replacement factor" or "years' supply at the time of its discovery" of 30, whereas that of East Texas was only 1.9, as shown in Table 2. In other words, the cumulative production of the Bradford field up until the end of 1941 has been equivalent to 30 years of United States production at the rate the country was producing in 1875, the year Bradford was discovered. East

TABLE 1

Large Percentage of Reserves in a Few Outstanding Fields

FIELD	Discovery Year	Est. Reserve End of 1941, Millions of Barrels	Percent U. S. Reserve
East Texas	1930	3,040	15.6
Conroe, Texas	1931	575	3.0
Coalinga, California	1887	456	2.3
Wasson, Texas	1937	415	2.1
Yates, Texas	1926	408	2.1
Friendswood, Texas	1937	405	2.1
Wilmington, California	1932	370	2.1
Hastings, Texas	1934	330	1.6
Kettleman Hills, California	1928	319	1.6
Goldsmith, Texas	1935	311	1.6
Tom O'Connor, Texas	1934	291	1.5
Slaughter, Texas	1937	280	1.5
Anahuac, Texas	1935	235	1.4
Thompson's, Texas	1931	220	1.1
Elk Hills, California	1919	200	1.0
Midway-Sunset, California	1901	199	1.0
Ventura, California	1916	166	1.0
Total			42.6

Source of Data: The Oil Weekly, Vol. 104, No. 8, p. 48, 1942.
The Oil Weekly, Vol. 105, No. 2, pp. 35-36, 1942.
The Oil Weekly, Vol. 105, No. 9, pp. 32-34, 1942.
The Oil and Gas Journal, Vol. 40, No. 25, p. A-82, 1941.
The Oil and Gas Journal, Vol. 40, No. 38, p. 118, 1942.

TABLE 2
Comparison of Old and New Fields

FIELD	Year Discovered	U.S. Prod. in Year of Discovery in Thousands of Barrels	Prod. of Field to End of 1941 in Thousands of Barrels	"Replacement Factor" or Years' Supply at Time of Discovery (on Basis Prod. to End of 1941)
Bradford	1875	11,963	C 360,000	30.
Salt Creek	1889	35,164	298,713	8.
Coalinga	1896	60,960	386,143	6.3
Midway-Sunset	1900(?)	69,389	910,470	13.1
Panhandle District	1924	710,463	409,449	0.6
Oklahoma City	1928	901,474	546,750	0.6
East Texas	1930	898,011	1,702,847	1.9

After Snider, but brought up to date.

Texas, however, could have supplied the domestic needs for only 1.9 years at the national production rate in 1930, although it has far surpassed Bradford in total cumulative yield in its comparatively short life.

The "ultimate replacement factor" would be based on the ultimate production, which is a matter of estimate. In answer to the criticism that the newer fields, because of their recovery time (especially those discovered during the proration period—post 1931) have a relatively greater part of their total production left to be produced in the future and therefore cannot be compared with the older fields, it may be pointed out that East Texas, the largest field in the United States, has an "ultimate replacement factor" of 5.3 (from Tables 1 and 2). The "ultimate replacement factor" of only a very few of the fields or districts discovered since 1930, approaches one.

Perhaps more succinctly expressed is the fact that what we now generally call a major field, a field with an ultimate production of at least 20,000,000 barrels, would have supplied 2 years' demand in 1875, ⅓ of a year's demand in 1900, 2½ weeks' demand in 1920, and 6 days' demand in 1941.

The demand for petroleum, then, has shown phenomenal increases while the relative importance of individual oil fields has shown a sharp decline. Although our proven reserves are cumulatively increasing, there is still an important question as to whether we can continue to maintain a production in excess of a demand not limited by high prices. In this regard, it is important to determine what trend, if any, is indicated by the discovery rate.

Discovery Rates

Petroleum reserves have been rather steadily augmented by extension of known fields and by exploratory drilling in known petroliferous provinces, which have yielded new discoveries. The backlog of petroleum has increased, in general, because more oil has been discovered than produced. For most of the years from 1859 to the present, the known reserve of petroleum has not been depleted by producing more oil than was discovered and made available by improved techniques. This fact not only attests to the improvements of exploration and production technology, but also is striking proof of the magnitude of the fortuitous conditions, necessary for petroleum genesis, which existed so extensively throughout much of the geological history of the United States. The American exploratory and production techniques have become increasingly better and more effective because there has and does exist in the United States such a large supply of oil to pay for the improvements of these techniques.

Technology and the earth sciences can develop increasingly more perfect exploratory and production tools, but these tools, however perfect, will eventually fail to find a single new oil field. From man's point of view, the amount of free petroleum within the United States and all other oil-bearing areas of the world was limited long ago.

The geological fact that the United States petroleum supply is limited has only been supported statistically in the last few years. Previous to this, the discovery rate, upward in trend despite fluctuations, had tended to overshadow the finite nature of this mineral resource.

Outstanding among competent authorities who have compiled statistics on the discovery rate in oil finding are Lahee and Pratt, the former, chief geologist of Sun Oil Company, and the latter an ex-chief geologist of Humble Oil & Refining Company and now vice president of Standard Oil Company of New Jersey. The figures of each can be checked for the most part by other sources, notably the trade journals and the annual review numbers of the Bulletin of the American Association of Petroleum Geologists and the volumes on Petroleum Development and Technology of the American Institute of Mining and Metallurgical Engineers.

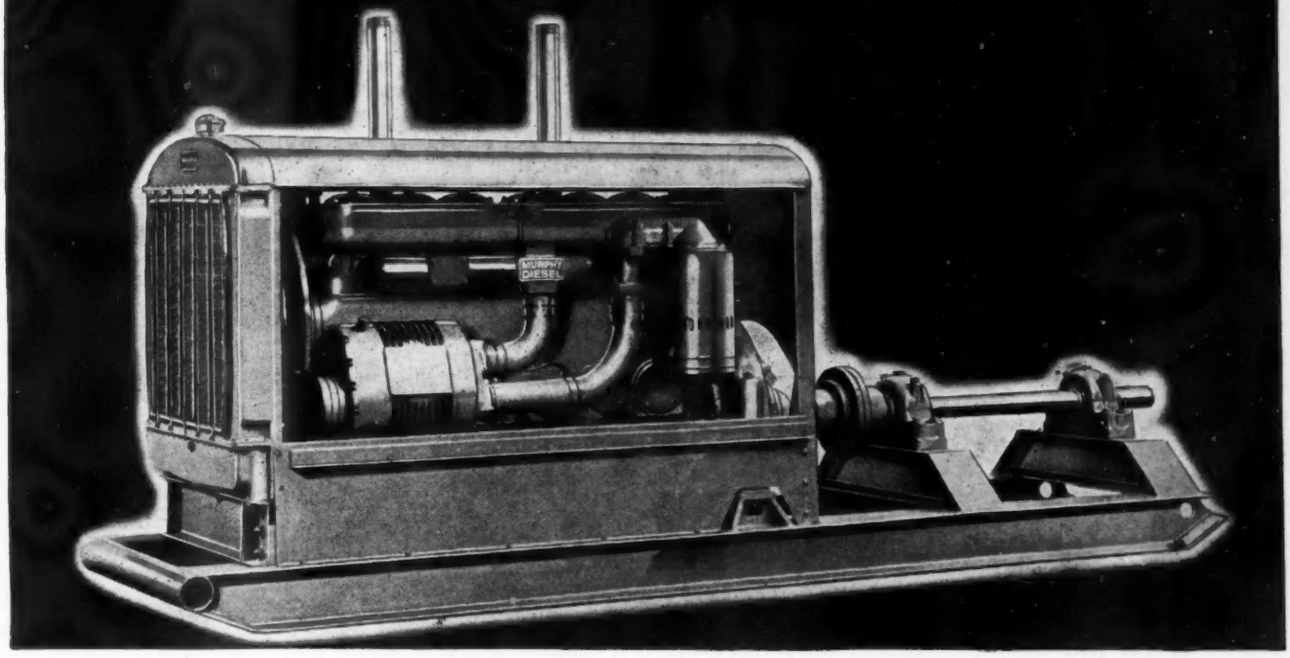
For the past seven consecutive years, January 1, 1935, to January 1, 1942, Lahee has examined in detail the effectiveness of the American exploratory effort. In general he measures the discovery rate by a detailed analysis of the results of wildcat drilling. In Figure 1, he has recorded the performance of the domestic exploration activities from 1937 through 1941. He shows that this nation has been drilling more and deeper wildcats but has been finding less oil each year ex-

TABLE 3
Experience in Exploration for Oil in United States

Year	(1) Thousand Dry Holes	(2) Major Fields Discovered	(3) Billion Barrels Discovered	(4) Dry Holes per Major Field	(5) Thousand Barrels Disc'd per Dry Hole	(6) Average Weighted Price for Oil
1920-22	18.2	20	3.34	910	180	$2.30
1921-23	16.9	25	3.34	680	200	1.75
1922-24	17.1	26	2.51	660	150	1.60
1923-25	18.3	28	2.20	650	120	1.70
1924-26	20.1	40	4.33	500	220	1.90
1925-27	21.9	43	4.57	510	210	1.80
1926-28	22.3	54	6.72	410	300	1.60
1927-29	22.3	47	5.45	470	240	1.35
1928-30	21.9	41	10.01	530	460	1.30
1929-31	18.5	31	8.71	600	470	1.10
1930-32	14.1	20	7.30	670	510	.90
1931-33	10.6	22	2.20	480	210	.70
1932-34	11.2	26	2.65	430	260	.80
1933-35	12.6	42	3.98	300	320	.90
1934-36	14.5	51	5.15	280	360	1.05
1935-37	16.6	58	5.06	290	300	1.10
1936-38	17.7	56	4.85	320	270	1.15
1937-39	18.8	46	3.92	410	210	1.15
1938-40	19.0	27	2.61	700	140	1.10

Source: Pratt, W. E., Oil in the Earth: Univ. Kansas Press, Table I, p. 71, 1941.

POWER FOR THE "PEAK LOADS" . . .
ECONOMY FOR THE LONG PULL



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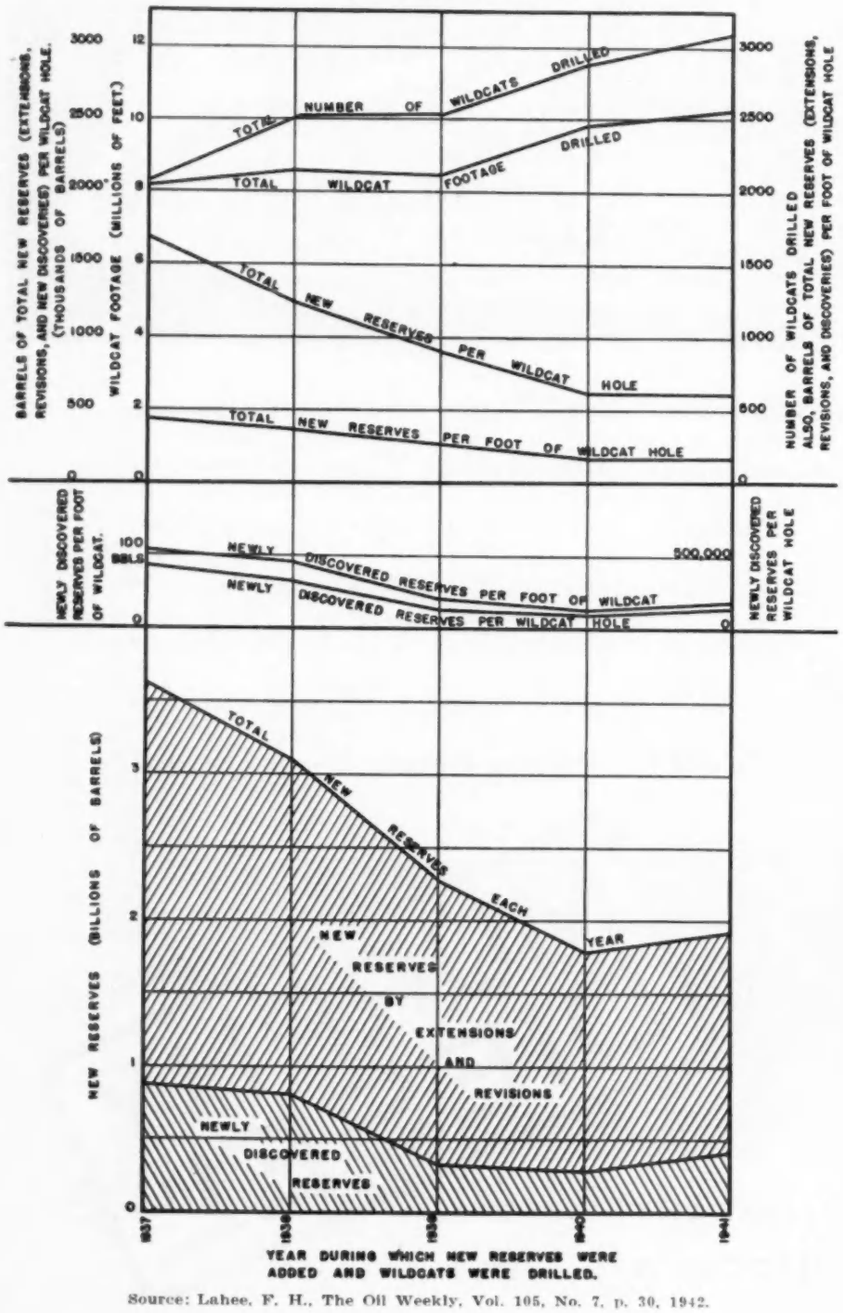
cept in the last, when a slight increase was obtained.

Pratt, however, measures the discovery rate directly by the quantity of oil and number of major fields found per period of time. But, in part, his method of measurements is similar to that of Lahee, for he shows the number of dry holes drilled per period while searching for the amount of oil and number of fields discovered during that period. (See Table 3).

It should be noted that Pratt assigns the total recoverable oil (the total production plus the remaining reserve) of each field to the year of its discovery. Thus the total amount of oil in the East Texas field, as proved by extensions each year, is credited to the year of discovery, 1930.

Lahee, however, in his analysis of the discovery rate prefers to show for each year only the amount of oil actually proven to surround the immediate area of the borehole. Obviously this is a more accurate method, for the extent of the producing formation and the changes in its porosity, permeability and thickness are not known until the field is drilled up. Thus from year to year this is a more accurate gauge of the exploratory effort, for it requires no detailed revision; hence the record shows directly whether more or less oil is being discovered.

FIGURE 1
Wildcat Results 1937-41


BARRELS OF TOTAL NEW RESERVES (EXTENSIONS, REVISIONS, AND NEW DISCOVERIES) PER WILDCAT HOLE. (THOUSANDS OF BARRELS)
WILDCAT FOOTAGE (MILLIONS OF FEET)
NUMBER OF WILDCATS DRILLED ALSO, BARRELS OF TOTAL NEW RESERVES (EXTENSIONS, REVISIONS, AND DISCOVERIES) PER FOOT OF WILDCAT HOLE
TOTAL NUMBER OF WILDCATS DRILLED
TOTAL WILDCAT FOOTAGE DRILLED
TOTAL NEW RESERVES PER WILDCAT HOLE
TOTAL NEW RESERVES PER FOOT OF WILDCAT HOLE
NEWLY DISCOVERED RESERVES PER FOOT OF WILDCAT.
NEWLY DISCOVERED RESERVES PER WILDCAT HOLE
NEWLY DISCOVERED RESERVES PER FOOT OF WILDCAT
NEWLY DISCOVERED RESERVES PER WILDCAT HOLE
NEW RESERVES (BILLIONS OF BARRELS)
TOTAL NEW RESERVES EACH YEAR
NEW RESERVES BY EXTENSIONS AND REVISIONS
NEWLY DISCOVERED RESERVES
1937
1938
1939
1940
1941
YEAR DURING WHICH NEW RESERVES WERE ADDED AND WILDCATS WERE DRILLED.

Source: Lahee, F. H., The Oil Weekly, Vol. 105, No. 7, p. 30, 1942.

The most recent articles of both authors[6, 7] indicate a downward trend in the American discovery rate since 1936. In fact, Pratt shows (Table 3, column 3), from a long range point of view, that in the period 1920-1940 the greatest quantity of the national oil supply was found during the period 1928-1930. For Texas, in particular, his Table 4 shows that in billions of barrels of oil discovered a peak was reached in the period 1929-1931. The giant fields, East Texas (1930), Conroe (1931), and Thompson's (1931), account for this high point.

It should be pointed out that Pratt has arranged the data in successive three-year periods, each of which includes the last two years of the preceding period. The purpose of the two-year overlap is to smooth out short-term inequalities.

Not only has less and less oil been found since 1934-1936, but also the number of dry holes per major field has been markedly rising.

Pratt's solution of the falling discovery rate is an increase in the price of crude oil. With higher prices, more exploratory drilling can be financed and consequently, up to a certain point, more oil will be found. However, raising the price of crude cannot extend the a priori geologic limits of a fund resource.

Lahee states and answers the problem thus:

"What is the significance of the falling rate of discovery? It cannot be due to lessened activity in wildcatting, for, except for a temporary set-back in 1939, the number and average depth of wildcats has increased through the five-year period. Nor can it be due to any lessened application of technical methods in exploration, for there has been a steady advance in the refinement and use of techniques. *We believe it due mainly to the growing difficulty of finding new geological traps for oil.* [Italics by the present writer.] The more conspicuous and easily mapped structures have long ago been located and drilled. Also, drilling has tested most of the shallower prospects on these structures. Remaining un-

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TABLE 4

Experience in Exploration for Oil in Texas

Year	(1) Thousand Dry Holes	(2) Major Fields Discovered	(3) Billion Barrels Discovered	(4) Dry Holes per Major Field	(5) Thousand Barrels Disc'd per Dry Hole
1920-22	4.8	7	.47	690	98
1921-23	4.0	8	.58	500	145
1922-24	4.5	9	.58	500	130
1923-25	5.2	14	.91	370	175
1924-26	6.7	22	2.37	300	350
1925-27	7.9	26	2.63	300	330
1926-28	8.9	27	2.81	330	320
1927-29	9.4	21	1.68	450	180
1928-30	9.5	19	6.62	500	700
1929-31	8.1	13	6.98	620	860
1930-32	6.3	8	6.44	790	1010
1931-33	5.1	9	1.36	570	270
1932-34	5.6	15	1.86	370	330
1933-35	6.4	26	2.57	250	400
1934-36	7.2	32	3.05	220	420
1935-37	7.8	30	2.38	260	310
1936-38	7.9	28	2.20	280	280
1937-39	7.7	18	1.65	430	210
1938-40	7.1	11	1.10	640	150

Source: Pratt, W. E., Oil in the Earth: Univ. Kansas Press, Table II, p. 72, 1941.

discovered reserves are largely either:

"(1) in regions not yet explored, or

"(2) they are in reservoirs deeper than those reached on already exploited structures and often unconformably related to the strata that contain the known reserves, or

"(3) they are in reservoirs of the stratigraphic pinchout type, which can seldom be located by surface observations."[8]

The areas with the most favorable geological conditions for the accumulation of petroleum are Texas, Oklahoma and California. Each has proved its ability to yield oil. No other state in the last 20 years has been able to rival the consistent lead of these three. Table 6 summarizes their past and future importance. Already shallower production in these states has been heavily exploited, but what about their possibilities of meeting needed reserve requirements through development of deeper horizons and discovery of new deep producing fields?

Texas Is Crux

Texas is by far the dominant petroleum producing state. Of every 100 barrels of United States production, the contribution of Texas:

1. has been.....28 percent
2. currently is.....40.5 percent
3. will be.....57.0 percent

The geological conditions, especially deep and large basins with thick sections of almost uninterruptedly deposited sediments rich in petroleum yielding organic matter, are present in equal magnitude in scarcely any other region, commensurate in size, in the world.

Texas is now called upon for two fifths of the total production of the United States. It has underground over half of the United States total reserve, but since the other main producing states are showing a decline in both production and reserves, the demand from increasing consumption which Texas must fill is thereby two-fold. What are the indications that in Texas new major fields will be found which will yield sufficient oil to make up for the declines in other states and also supply an increasing national demand? In short, the problem of reserves from a national point of view has its crux in Texas.

Upper Gulf Coast

The estimated proven reserve in the Upper Gulf Coast is 23 percent of the Texas total. Nine fields have 60 percent of the reserve of this district (Table 6). Here again the importance of large fields is emphasized.

Since discovery of Spindletop in 1901, exploration and development on the Upper Gulf Coast has proceded from anomalies surficially recognizable as mounds or salt lakes, the evidence of the shallow, piercement-type salt domes (e. g., Spindletop, Barber's Hill, Damon Mound, and Sour Lake) to the minor structural features, frequently with closure primarily effected by faulting. Concurrently exploration methods have evolved from the simplest and most obvious methods to those of high precision and of resolving power at increasingly greater depths.

Between the above extremes of structural oil traps are the deep piercement-type salt domes and the deep-seated major closure domes. This latter type of structural trap, the non-piercement-type of dome, accounts for the greater part of the present production and almost three quarters of the reserve of the Upper Gulf Coast of Texas.

The productive area of the largest of the deep-seated domal fields is measured in thousands of acres (e. g., Conroe, 18,900 acres) in contrast to the only tens or hundreds of productive acres of the piercement-type domal fields (e. g., Sour Lake, 875 acres). The sands in the former type cover the structure as a blanket with comparatively more gentle dips; hence the oil level, at only a slight angle to the formational dip, occupies laterally a great volume of sand pore-space. In the piercement-type, the productive sands abut the salt mass, and except for limited cap rock production, oil is obtained only from a narrow ring around the dome. Likewise, the level of the

TABLE 5

Comparison of Production and Reserves in California, Oklahoma, Texas, and Illinois

STATE	Prod. to End of 1941 in Millions of Barrels	Percent of Total U. S. Prod.	Prod. for 1941 in Millions of Barrels	Percent of U. S. Total for 1941	Estimated Reserves, Millions of Barrels	Percent of U. S. Total Reserve
California	5,858.2	23	230.4	16.5	3,226.0	16.5
Oklahoma	4,919.7	20	153.3	11.0	952.0	4.9
Texas	7,111.5	28	500.2	40.5	11,124.0	57.0
Total (3 States)...	17,869.4	71	883.9	68.0	15,302.0	78.4
Illinois	364.2	1.4	111.2	8.0	327.5	1.7

Source: The Oil Weekly, Yearbook-Forecast Number, Vol. 104, No. 8, p. 48, 1942.

TABLE 6

Outstanding Fields of the Upper Gulf Coast of Texas

FIELD	Year Discovered	Main Producing Formation	Prod. to End of 1941 in Millions of Barrels	Estimated Reserves Jan. 1 1942, in Millions of Barrels
Conroe	1931	Yegua	129	575
Friendswood	1937	Frio	9	405
Hastings	1934	Frio	35.2	330
Anahuac	1935	Frio	20.1	235
Thompson's	1931	Frio	43.4	220
Old Ocean	1934	Frio	14.7	148
Withers	1936	Frio	7.7	58
Raccoon Bend	1928	Yegua	23.8	37.5
Tomball	1933	Yegua	20.0	34.5
				2,043.0

(Total Estimated Reserve, Upper Gulf Coast, 2,756.)
Source: The Oil Weekly, Gulf Coast Number, Vol. 105, No. 2, 1942.

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liquids is at a relatively steep angle to the dip of the beds. Thus, the lateral volumetric extent of the oil is distinctly limited, although upward migration, effected by fracturing, explains the large production of Spindletop and some of the other piercement-type fields.

Not since 1937 has a deep-seated dome with major closure been discovered in the Upper Gulf Coast of Texas. The discoveries of the past four years, despite continued search directed by the wealth of accumulated subsurface data and deeper drilling, have failed to include a field of national importance. The increase in reserves has for the most part come from extensions of known fields. The geologic limits to the number of deep-seated domes becomes then as well defined, by a process of elimination, as the long since proved number of piercement-type salt domes.

Further, just as the non-piercement-type dome represents an optimum structural trap in this district, so, too, are there in the productive sands of the stratigraphic series, intervals of optimum porosity, permeability, and maximum thickness. The limits of this optimum area are not altogether well defined, but from the point of view of major fields, the up- and down-dip boundaries of certain of these zones can now be drawn.[9] For example, the Yegua formation, which at its outcrop is composed dominantly of lignitic clay-shales with only minor, thin, porous sands,[10] develops down-dip thicker and better sands interfingered with shales and silty shales. Further down-dip the sands become less frequent and thinner, and it is logical to conclude that they are completely replaced by marine shales under the Gulf. Thus between the two extremes (the up-dip, outcropping, mainly non-marine, thin sands, and down-dip, entirely marine, shale section) there is an optimum area where the non-marine and marine sediments interfinger. This is the area of the potentially greatest petroliferous sands. Structural traps present in this zone of the Cockfield-Yegua, have yielded fields like Conroe, Raccoon Bend, and Tomball. Down-dip from the Conroe trend the sands are more poorly developed, affording no major reserve in the Yegua. This factor of gradational sedimentary changes up- and down-dip from an optimum area of greatest oil-bearing potentiality and therefore major reserve, definitely limits, in addition to economic factors, e. g., high cost of deep drilling on land and offshore, the possibility of deeper down-dip major production from oil horizons which are productive up-dip. Structural closure may be greater at depth, but suitable lithologic characteristics are frequently lacking. On the Upper Gulf Coast the geological coincidence of a repetition of favorable oil-sand sections of the major-reserve class in two distinct formations over the great non-piercement domes is unknown.

Conroe, Tomball, and Raccoon Bend, all producing from the Cockfield-Yegua, have failed thus far to produce from the Wilcox. Conversely, Joe's Lake (Spurger), failing to produce from the Cockfield-Yegua, is a major field producing from the Wilcox. In the deeper coastal zone, the reserve established at Friendswood is in the Frio, directly beneath a seal of marine Oligocene (the Discorbis, Heterostegina, and Marginulina zones). The Vicksburg and Jackson below are known to be marine shales. Further, it is unlikely that Cockfield-Yegua production will be found at Friendswood, since up-dip at the Clinton field, only a thin, feather-edge, gas sand occurs in an otherwise argillaceous Cockfield-Yegua section.[11]

Similarly the possibility of Cockfield-Yegua production at Anahuac and Old Ocean and other major fields along the productive Marginulina-Frio subsurface strike is very improbable, because, as at Friendswood, along the same strike, the Yegua below is lacking in sand bodies.

The subsurface data thus indicate that no major reserve will be established by drilling deeper on the large, non-piercement-type structures of the deeper Coastal zone. In summary, then, the great reserves of the Upper Gulf Coastal oil fields of Texas are confined to a few non-piercement domes, and the main productive reserve of each of these is thus far limited to only one formation. The possibility of finding production in deeper and older formations in any of these fields is remote.

The decline in the quality or magnitude of the newly discovered reserves has been mentioned briefly. Brace states:

"The unfavorable trend in the Upper Texas Coastal discovery rate that set in about the year 1937, has continued through 1941. This unfavorable trend has not been so much a matter of numbers of new discoveries, as of quality of the individual discovery. For example, there were 10 new areas brought into production in 1939 and 12 in 1940. This number further increased to 15 in 1941. Yet the amount of new reserves represented by the 15 new areas of this past year is unquestionably smaller than was that of the 10 new areas for 1939."[12]

In the main, new drilling and testing techniques (notably electric logging, gun perforating and cement squeezing) are responsible for the continued finding of new fields which are increasing in number of "low grade and of questionable economic value."[13]

Thus the Upper Gulf continues to indicate that major closures along the optimum-strike area of the major reserve-holding sands are exhausted. The up-dip Wilcox trend is the last and oldest, geologically, of oil-bearing series which has not definitely shown evidence of diminishing returns. Nevertheless, to date no outstanding major fields comparable to those with reserves in the Yegua or Frio have been found. Brace explains this fact thus: down-dip where the Wilcox is to be reached at depths ranging from 8,000-11,000 feet, sands are relatively poor; up-dip, "where sand conditions are not necessarily a problem, the unfavorable factor is the absence of structure."[14]

Two years have passed since Brace made that generalization and only one Wilcox field, Lake Creek, which approaches the major-reserve class, has been discovered in this area. In fact, since 1937, only one other Wilcox field of considerable importance has been proven, i. e., Joe's Lake, Tyler County. Each of these two fields may eventually produce more than 20,000,000 barrels, but that is about all.

Consequently, just as the cycle of structural exploration has reached the point of diminishing returns, so, too, has the related cycle of testing oil-bearing formations.

The only untested oil-bearing territory of the Upper Gulf Coast of Texas may be the offshore, water-covered, gentle slope of the Gulf of Mexico. The salt domes and the prolific Miocene production of Southern Louisiana may continue westward "as a potential source of salt-dome oil for a distance of at

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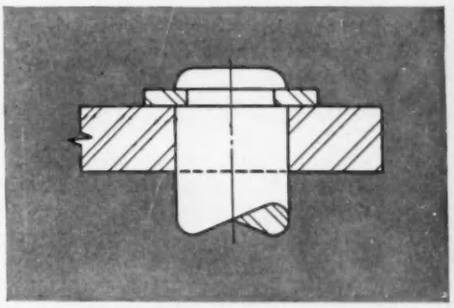

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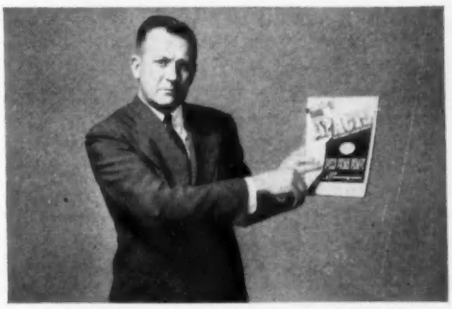

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least 50 miles off the mouth of Galveston Bay."[15] Even though the rather evenly distributed salt domes of deltaic Southern Louisiana may continue westward into offshore Texas, there is the economic fact that in Texas, lacking the natural drilling wharf of the Mississippi delta, exploration and drilling at the present price of crude, is unfeasible. It may be noted that of the many fields of Southern Louisiana only two have prospects of reaching the 100 million mark.

In summary, an increase in reserves from the Upper Gulf Coast of Texas is very improbable. This great reserve at tidewater, in the center of the greatest concentration of refining capacity in the United States,[16] is not being augmented by discoveries of national importance. By analogy, the Upper Gulf Coast of Texas is a well-mined district, the continued reserve importance of which is derived mainly from extension of known ore-bodies, and in part from reworking or deepening its placer deposits, the flank sands of the greatly depleted, small-productive acreage, piercement-type salt domes.

West Texas

The estimated reserve of West Texas is 2,564,831,950[17] barrels, which represents:

	Percent
(1) of the Texas reserve	23
(2) of the national reserve	13

Here, even more than in the other oil-bearing areas, a few outstanding fields contain the greater part of the reserve.

Table 7 shows that only 7 fields have 70 percent of the West Texas reserve.

TABLE 7

Oustanding Fields of West Texas

FIELD	Year Discovered	Estimated Reserve in Millions of Barrels	Percent of West Texas Total
1. Wasson	1937	415	16
2. Yates	1926	408	16
3. Goldsmith	1935	311	12
4. Slaughter	1937	279.5	11—
5. N. Cowden	1930	135.7	5+
6. Seminole	1936	128	5
7. McElroy	1926	127.3	5—
			70

Source: The Oil Weekly, West Texas-New Mexico (Permian Basin) Number, Vol. 105, No. 9, p. 36, 1942.

In contrast to the other dominant oil-producing areas discussed in this paper, the discovery of several of the outstanding fields of West Texas occurred recently. This is the effect of several factors, although primarily, time may be the most important. The Permian Basin area was the last geologic province proven to be oil-bearing.[18]

Also, both the distance from high gasoline consuming areas and the subnormal price for much of the crude, which is of low gravity and/or sour, have held back rapid exploration. Even today outlets are insufficient, although the capacity of trunk lines has reached 440,000 barrels daily.[19] Nevertheless, on the basis of wells drilled, West Texas is the most active area in Texas and second only to Illinois nationally.[20] Since 1938, the continued keenness of the exploratory effort is not, however, yielding outstanding fields, either from deeper formations in proven fields or from wildcat areas.

Ordovician production from fields which have produced from the Permian has not yet proved to be comparable to that from the Permian above.[21] Beneath the Ellenberger, two wells have shown oil in a conglomerate section overlying granite.[22] Other tests, too, have reached the granite basement.

Virgin territory also is diminishing rapidly. The Central Basin platform is fairly well outlined. In fact, much of the exploratory effort is an attempt to find production between the established fields on this uplift. Other mammoth fields to the north of Wasson and Slaughter are not indicated by subsurface studies. A recent work shows that from south to north along the eastern edge of the Central Platform, there is a gradation from dolomite and dolomitic limestones northward into evaporites and clastic sediments.[23] This gradation may be particularly noted in the Whitehorse and San Andres groups.[24]

In the San Andres group, sediments of which hold most of the reserve, notably at Wasson, Slaughter, and North Cowden, anhydrite begins to appear in the upper part in wells in southern Gaines County. From here north to central Cochran County (to the north of Slaughter field), well cuttings reveal an increase in anhydrites and the occurrence of salt. (The evaporites come in northward at the expense of the dolomite facies.) Further increase of salt and more extensive gradation of dolomite to anhydrite continues until at the north end of the cross section, the entire San Andres group is approximately 50 percent evaporites.[25] Fritz and Fitzgerald, however, fail to show other than to mention, the gradation in the Whitehorse group, members of which account for major reserves to the south.

About 39 miles to the east of this area of facies change in northern Cochran County, some small production was discovered in 1941. It is interesting that both the Whitehorse and San Andres were dry, perhaps lacking in dolomitic horizons. Production, which is located 3½ miles northeast of Lubbock, is from the Wolfcamp formation or basal Permian.[26]

From the Slaughter-Lubbock area north to the Panhandle fields, prospects for oil are considered by the West Texas Geological Society to be best in the basal Permian, which is generally a dolomite and limestone with some shale in the upper part.[27] These authors likewise point out that in this area, except for the basal portion, the Permian is largely redbeds and clastics. The Cambro-Ordovician is predominantly dolomite where tested along the eastern margin. To date there is no production, although several tests have penetrated the section to the granite basement.

The stratigraphic section of the Delaware Basin, adjoining the Central Platform on the southwest, indicates major production, if any, at extreme depth.

"The upper part of the Permian section of the Delaware basin contains as much as 4000 feet of chiefly anhydrite and salt, with the Rustler dolomite and anhydrite at the top. Beneath is as much as 3500 feet of sandstone and black shale of the Delaware mountain group, part of which grades laterally into limestone and dolomite reefs on the margins of the Delaware basin and the remainder probably wedges out. Black limestones and shales occur in the lower part of the Permian sections."[28]

The basin to date has yielded only small fields (e. g., Wheat and Chancellor), with the sole commercial production in the upper part of the Delaware mountain group. The oil, 37-39 gravity, is desirable, but the small size of the known structures and the overlying thick evaporite series (up to 4000 feet) has discouraged exploration and the expectancy of large reserves at medium drilling depths. Production from pre-Permian formations is unlikely, if the Permian section is up to 12,000 feet thick as the composite section of King suggests.[29]

In addition to these factors deterring exploration, there is an

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absence of major structures within the basins of West Texas if one accepts the extensive studies of King.[30] In pre-Wolfcamp time the basins were areas of little disturbance, whereas the platforms were already established as positive areas. During Permian time, i. e., post-Wolfcamp, the basins and platforms, respectively, progressively subsided and rose.[31]

Tectonically the oil-producing areas of West Texas have been relatively quiescent since the close of Permian time, a fact which is illustrated by the slight expression of structure in the Mesozoic rocks of the area. In other words, little or no folding has taken place in the basins either in Paleozoic, Mesozoic or Cenozoic.

In summary, the major oil reserves of West Texas were trapped by structures along the positive areas, the platforms, initially formed in pre-Permian time and effectually closed during Permian orogeny, a local aspect of the much wider Appalachian diastrophism. The basins, in contrast, have been tectonically inactive during and since pre-Permian time with a resultant lack of major reserve structural traps. The question of stratigraphic traps will be considered separately. West Texas, the highly productive area of which has been outlined, will continue for some time to maintain production and reserves by limited new discoveries and extensions of known fields and deeper horizons especially in the multiple-zone Permian rather than in the Ordovician, which may but has not indicated to date that it will prove comparable to the productive potential of the Permian.

Other Texas Areas

In other productive districts of Texas no outstanding fields have been found in recent years. The basins adjacent to the granitic uplift of the Panhandle have failed to yield commercial production despite several tests. The lower Gulf Coast, from the Rio Grande to the southwest boundary of the Upper Gulf Coast, apparently reached its climax in 1934 with the discovery of the Tom O'Connor field,[32] although West Ranch field is noteworthy after several lean years.

Rodessa and Talco, both discovered in 1936, and followed six years later by Hawkins, represent the most recently discovered major fields in east and northeast Texas—although North Texas is experiencing the discovery of a number of comparatively small fields. The other productive areas in the state have been explored both laterally and vertically; some, for example, West Central Texas and North Central Texas, have long since reached a peak, and others, notably the Laredo district of South Texas are regions of small pools.

Texas, then, presents no promising territory for new fields of the magnitude necessary to offset the reserve decline present in the other states. State decline in reserves will be impeded by extensions in West Texas and, in part, by deeper drilling in West Texas.

This discussion of the problem of petroleum reserves will be continued in a second installment, which will discuss the picture in Oklahoma and California, along with stratigraphic traps, petroleum substitutes and also present a summary.

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Corroded Casing Threatens Arkansas Sour Gas Fields

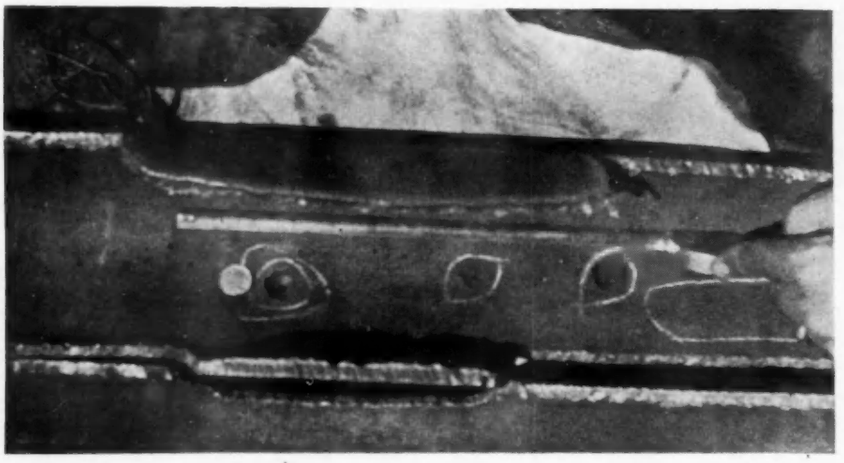
By ELTON STERRETT, Staff Writer

UNLESS present encouraging corrective attempts prove successful, processing and utilization of Arkansas' vast and strategically located stores of sour gas face a possible serious set-back through the discovery that many of the casing strings in the 115 producing wells of the Magnolia field, Columbia County, have been perforated from within by corrosive action, and are permitting leaks to the water string or into barren formations above the string setting. Although discovery of the difficulty occurred but little more than two months ago, already some 40 instances are reported where the casing is known to be affected, with a corps of engineers from the Arkansas Oil & Gas Commission maintaining an unending series of tests on bradenhead pressures in the remaining producing wells to detect any pipe failure immediately upon break-through. The commission is expected to make an early announcement regarding the outcome of corrective experiments.

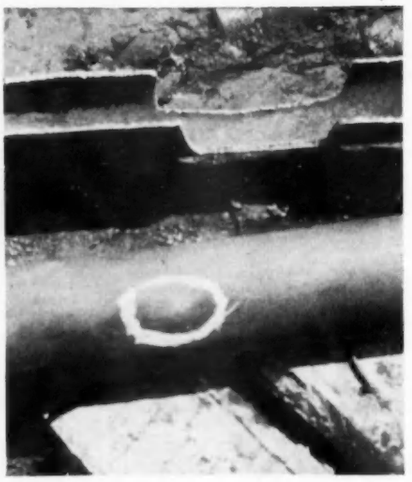
Wells in the Magnolia field are bottomed around 7500 feet below the surface (7100 feet subsea), most of them being completed with a string of 10-inch at around 2000 feet where a hard formation afforded a good seat, a protection string of 7-inch or in some instances 5½-inch being run to total depth and cemented to the water string. Production tubing is 2-inch.

Pitting Conditions

Corrosion or electrolysis, where the terms are considered to be differentiated, was found upon examination of some of the casing strings to have occurred in the 7-inch (or 5½-inch) at depths ranging from 134 feet below the surface as far down as 2390 feet. The pitting or failure follows definite patterns, extending in a narrow strip down the pipe, with only occasional and minor deviations of isolated pits outside this concentration. Pits on the interior of the pipe may be ½ inch or more in diameter, extending through the pipe to terminate in pinholes or small apertures, the largest so far measuring 3/16-inch by 5/16-inch, the elliptical hole having its longer axis parallel to that of the pipe.



Type of perforations in 5½-inch casing, showing uniformly elliptical outlines of corroded spots, the disk at the right being the size of a nickel and the extended tape giving check on distance between spots of maximum damage. Peculiarity of failures was that no large area was destroyed.



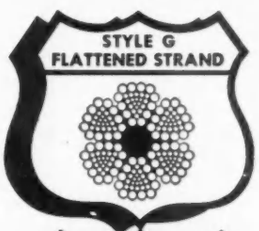
This small hole on the outside of the casing is the extent to which the damage had destroyed the entire wall of the pipe, forming a "flow bean" through which escape from the annulus set up the pressure rise at the wellhead which enabled the condition to be detected and well killed.

The pits lie along one strongly marked axial line, one hypothesis being that contact between tubing and casing afforded capillary channels for conducting the electrolyte or corrosive fluid. A second hypothesis for this linear distribution of the pits is that the string of casing, never absolutely vertical throughout any great length, inclined enough on one side or another to tend to form a vertically oriented canal down which flow of the droplets was concentrated, the active agent in either hypothesis being supposed to have found lodgment or temporary resting place at some slight irregularity or adhering foreign body on the inner surface of the pipe, there to set up the destructive action. This phenomenon, once initiated, offered as it developed an even greater lodging point, and finally a veritable sponge for the retention of the active agent at the spot where casing metal deterioration had been begun.

Theories on Causes

Lacking laboratory reproduction of down-the-hole conditions under surroundings which permit observation and evaluation of the factors resulting in the casing failure, two possible reasons

When You Pick The Wrong One . . . You Lose



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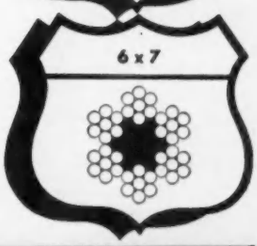

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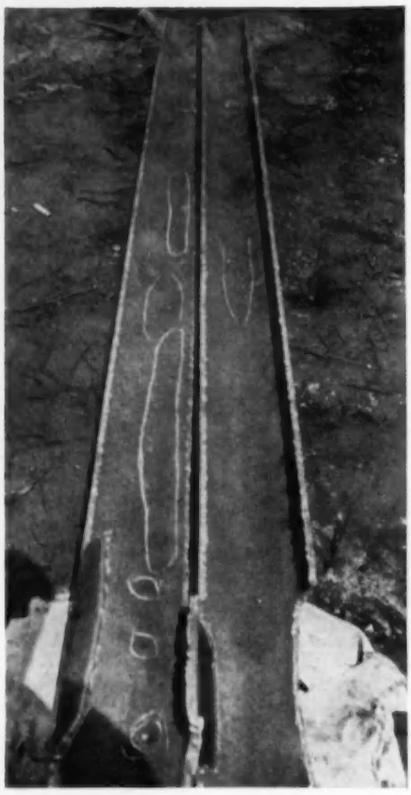


In this split 5½-inch casing, the distribution of the successive spots of corrosion longitudinally throughout a narrow area is indicated by the chalk markings. In this instance a single small area is also indicated on the matching half of the pipe, varying from the usual one-side distribution of the marks.

have been advanced. The electrolytic theory finds support in the fact that currents of an order as high as 2½ amperes have been detected at some wells, even though these strings may have been insulated from the surface flow string by dielectric gaskets. So far no method has been worked out whereby protective or cathodic currents could be introduced and controlled within the affected wells for the arresting of the destructive action.

The hydrogen-sulphide theory advanced by some observers requires the presence of water before the H_2S present in the gas, in the proportion of 1500 grains per 100 cubic feet of gas, can become an agent of metal destruction. Since the gas does contain a certain amount of water vapor, and conditions at some point within the annulus between tubing and casing string fall to a temperature far enough below bottom-hole values to cause condensation, it is entirely possible that this vapor, condensing on the cool casing rather than on the relatively warmer tubing, would tend to flow down the string, the concentration being aided by inclination of the string or by the line of contact between tubing and casing. The fact that the casing alone is attacked by the dilute sulphuric acid formed by dissolving the hydrogen sulphide of the gas in the droplets of water would tend to support the inclined trough hypothesis, rather than the tubing-contact theory.

Whatever the cause of the casing corrosion, it seriously menaces the Magnolia field, and by implication, all other sour-gas fields of the state. For the Magnolia area, developed throughout on 40-acre spacing, and with adequate water drive, has been produced throughout its more than 4 years of production life with a pressure decline of only 11 percent, against which is credited a production of 12 percent of the estimated ultimate recovery. This close correlation indicates that the optimum rate of withdrawal is being closely approximated.

Should any casing failure in any of the wells within the field result in sudden pressuring of some barren zone above the producing formation, or should a well run wild, in but a relatively short time this action would cause extremely high loss of potential production, together with dissipation of large quantities of oil or of the some 200 billion cubic feet of gas cap known to be overlying the 160 million barrels of oil. Detection of casing trouble before the material has been weakened to the point of serious rupture is therefore imperative, and quick action is necessary if the well is to be prevented from damaging the field.

Detection Methods

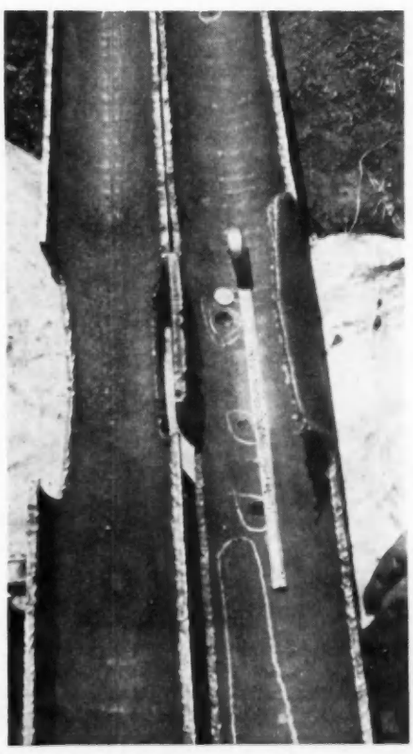
Detection of incipient failure is accomplished through checking the static pressure in the annulus between the tubing and the oil-string casing. Such an increase in pressure is direct indication that the oil-gas contact level within the annulus has been depressed; a condition which can occur only when gas or oil is withdrawn from the space, and from which normally no production takes place.

The sum of the casing pressure, composed of the pressure of the gas at the top of the annulus, plus the weight of this column of gas, and the pressure exerted downward by the fluid underlying the gas, is equal to the reservoir pressure at producing level. Whenever this casing pressure at the surface is increased above its normal value of around 1250 pounds per square inch for the Magnolia field, adjustment in either density or height of the gas-oil contact must be made to maintain the condition of equilibrium in the pressure equation. Since this holds if the pressure be arbitrarily increased at the surface, it is likewise evidence that lowering of the gas-oil level has brought about this condition, if surface settings remain unchanged.

The increase in gas pressure, caused by liberation of gas from fluid flowing upward through the annulus to some point of escape into the water-string annulus or into barren formations lower in the well, is definite evidence that there is flow through the annulus, and is warning that the seal or continuity of the casing string has been disrupted. This condition holds good whether the substance escaping from the well be gas or oil, inasmuch as there is a gas column found atop the oil column, this gas requiring blowing off before oil will flow at the surface.

In some of the wells found to have suffered impairment of the casing, this gas column within the annulus builds up rapidly, raising the pressure and again requiring blow-down if the well-head pressures are to be restored to normal for the field.

Casing from one of the wells found damaged has been pulled and inspected through slitting joints longitudinally with a torch, care being exercised to divide the pipe in such a way as not to destroy the pits. Out of 91 feet of casing—in this instance 5½-inch pipe—opened and examined, 52 feet were found to be corroded and pitted, the pipe below 2418 feet being found to maintain test pressures and, therefore, to be still serviceable. This pressure



Comparison of one damaged joint of casing in which the undamaged half is shown to be clear of failure while the other carries large pits, one of which had penetrated through pipe wall, with others close to the point at which further escape of fluids would have been permitted.

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test of the casing remaining within the well, while demonstrating its tightness, is only negative proof that no corrosion has occurred below this point. The cut was made below the normal or static gas-oil contact level within the well.

It is characteristic of all wells so far examined that the damage occurred somewhere within the range of pipe normally exposed only to the gas column above the oil-gas contact level, and damage is considered to be probable only within the limits of that zone.

Remedial Measures

Remedial measures for halting the progress of the damage are as yet diverse and wider adoption is dependent upon final determination of the nature of the phenomena contributing to the pipe breakdown. Some of the wells have been equipped with tubing packers at or near the 7000-foot level, and the space within the casing-tubing annulus from this point to the surface filled with 10-pound specially conditioned drilling mud. Water, furnace oil and sweet crude oil have also been tried above similar packers as means of excluding the formation of sour gas caps within the annulus.

Cementing of the space between the production and water strings of casing, presenting more difficulty in puddling with the 7-inch than with the 5½-inch casing might serve to reinforce the oil string, but could not be relied upon to seal holes in the inner string. This method also fails to inhibit further damage to the pipe within the encircling cement.

The Magnolia field prior to the discovery of the casing trouble was producing approximately 18,000 barrels of oil, together with 16 million cubic feet of sour gas, with a gas/oil ratio of 899. None of the gas produced is wasted, all being processed first to remove natural gasoline content, and the dry gas then processed to extract the H_2S. This desulphurization drops the hydrogen-sulphide content from that at entering of 1500 grains per 100 cubic feet to less than 1 grain per unit of gas. This sweet gas after processing is utilized as refinery fuel, for repressuring projects such as those in the Schuler field, and for powering pumping units in fields not flowing naturally.

This stock of available gas in the Magnolia field is threatened by the menace offered production in that field through potential casing failure, and its offer of adequate fuel supply to war industries located within economic transportation distance is dependent upon the evaluation of the cause of casing deterioration, and the development of some effective method for maintaining production at normal rates.

Other fields within the area which likewise show high hydrogen-sulphide content, and which are by implication possible sites of similar casing trouble are:

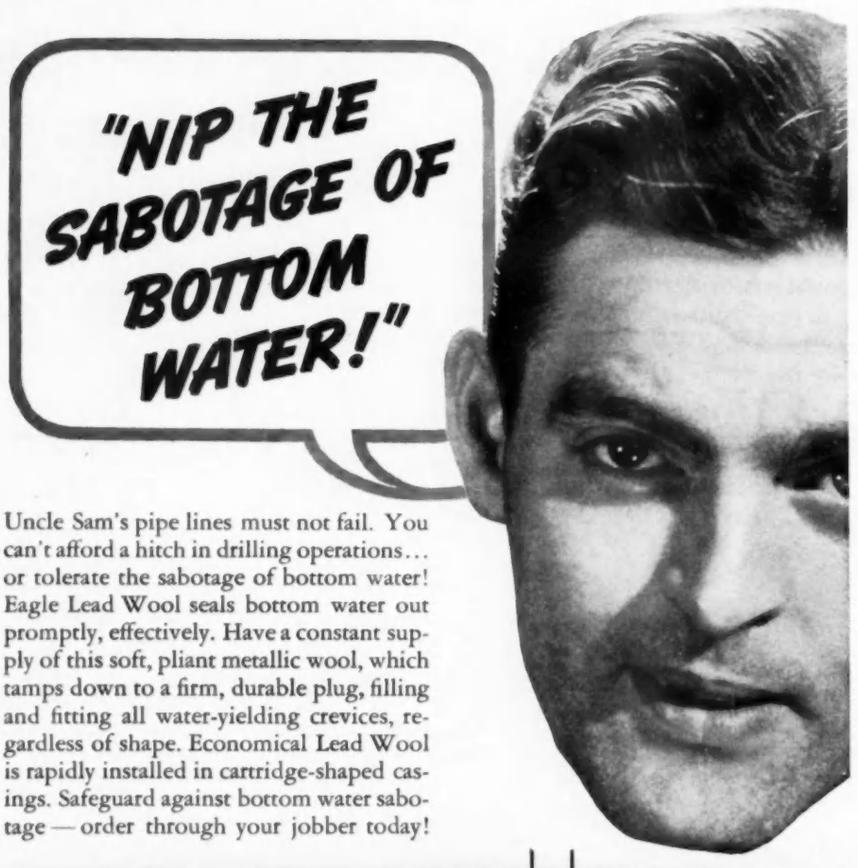
Field	Grains H_2S/100 cu. ft. gas	Delivery Pressure
Atlanta	1800	1500
Dorcheat	2400	2000
Magnolia	1500	•
Macedonia	1900	2000
McKamie	4050	3000

Delivery pressure is expressed in pounds per square inch at which delivery could be made to pipe line.

•Processed in gasoline plant and initial pressure expended.

All these other fields, having hydrogen sulphide content equal to or greater than that of the Magnolia area, are potential sources of industrial fuel through adaptation of the process which is so effective at Magnolia, and therefore represent a vast fuel supply which is as yet untapped, and which may be jeopardized or in part lost through duplication of the Magnolia casing failure in any or all the sour-gas fields, assuming that this failure proceed to the point where reservoir-content or pressure is dissipated or where disastrous blow-out destroys a portion of the productive area.

These other fields are likewise being watched for unconformable well-head pressures, and doubtless will profit from whatever remedial measures are evolved and eventually applied in Magnolia's 115 wells.



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Applying Bottom-Hole-Pressure Data to Production Problems

PART 3

Application of Bottom-Hole-Pressure to Flowing Wells

By EMORY N. KEMLER, Professor of Mechanical Engineering, Purdue University

PRESSURES have always assumed an important place in the operation of flowing wells. Tubing pressure and casing pressure have been used as an index of how a well is performing and a basis for prediction of future performance of wells. In the absence of other data such pressures were certainly better than no information at all. However, because of the variation in density of fluid in the flow string and the annular space between the flow string and casing and because of variation of friction in the flow string, such pressures do not necessarily give all the information necessary for making predictions as to flowing life, maximum production, proper production method, etc. When bottom-hole-pressure data are available, much more is known about the well and certain applications of these data may now be used to determine future methods of operation. Inasmuch as the lifting cost during periods of natural flow are generally much lower than for other methods of production, it is desirable to take advantage of any methods which might increase the flowing life of such wells.

Before discussing some of the applications of bottom-hole pressures, it is desirable to consider the manner in which a well flows. Figure 1 shows the summary of a large number of tests on a particular well which were taken at various rates of flow and at various points in the tubing string. The results show that at low rates of production, the flow was very steady. As the flow rate was increased to around 200 barrels per days, the flow up the hole became very unsteady, and caused a variation of top-hole pressure of approximately 50 pounds per square inch while producing at a steady rate. At the high-

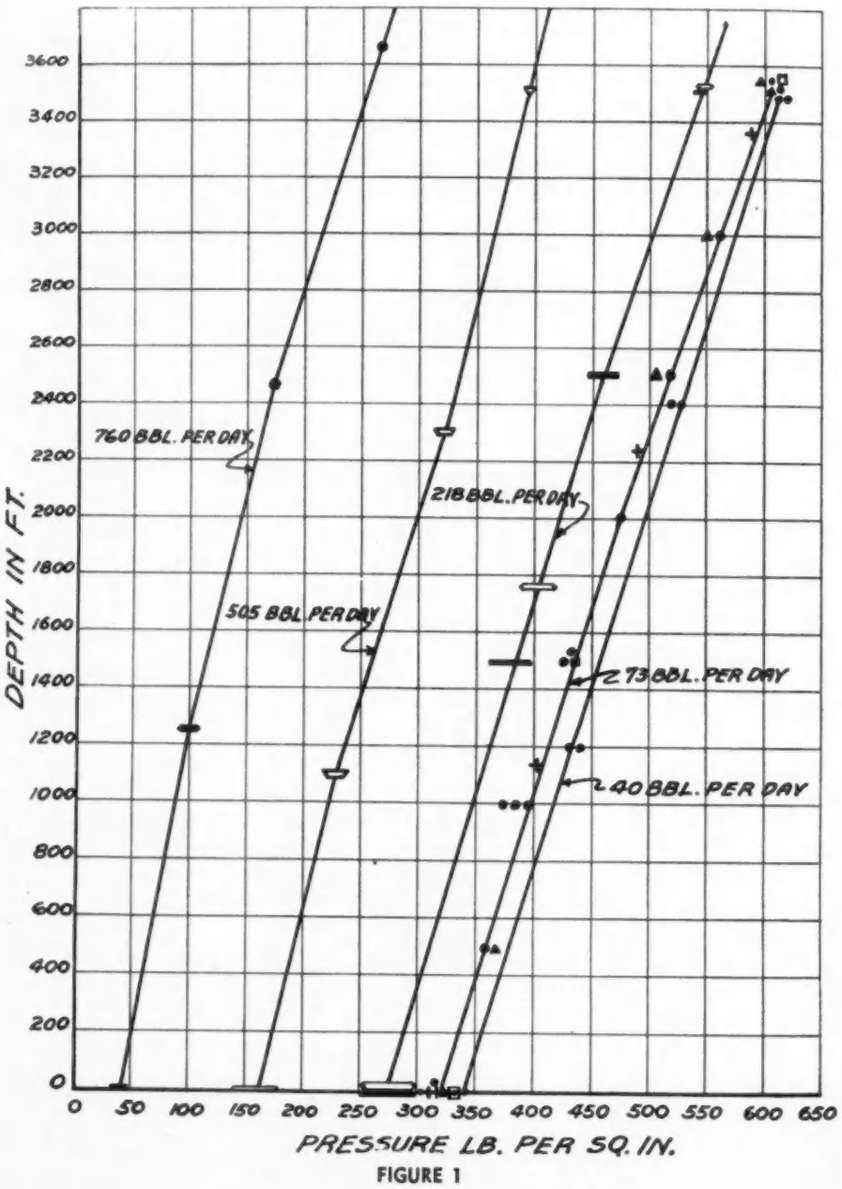


FIGURE 1

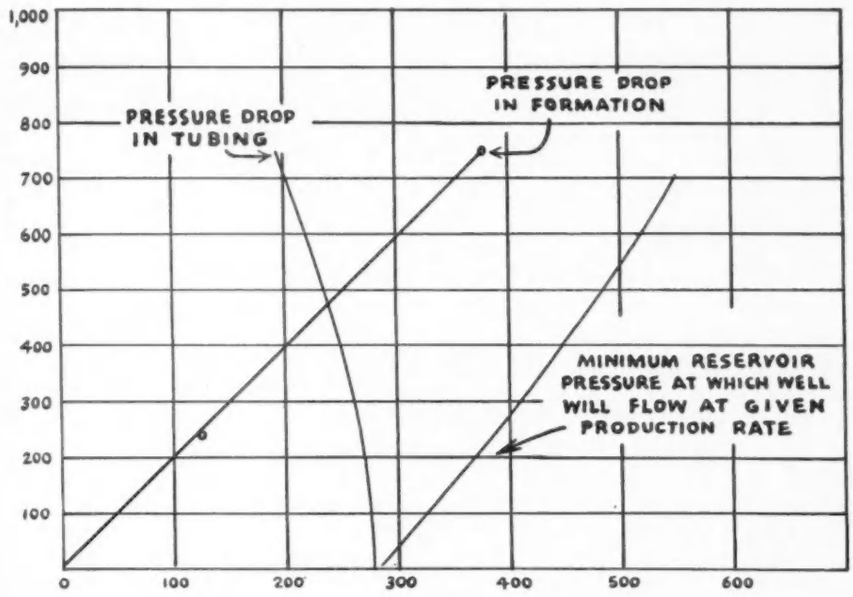


FIGURE 2

est rate of flow, 760 barrels per day, the flow was relatively steady.

Figure 2 shows a plot of pressure drop in the tubing for this well versus production in barrels per day. This plot shows a curious fact that the pressure drop in the tubing decreases as the rate of flow increases. This decrease in pressure is not very much but is enough to illustrate that rate of flow is not the controlling factor in determining the difference in pressure between the bottom of the hole and the surface. This difference in pressure could be considered as being made up of two parts—the first being the friction which would tend to increase the pressure difference as the rate of flow increased and the second being the weight of fluid in the flow string. That is, if at any instant the flow in the tubing were suddenly stopped, the fluid in the string trapped and measured, it would be found that the weight of this fluid would amount to a considerable portion of the difference in pressure between the bottom and top of the hole. While no satisfactory and complete correlation has been obtained between this difference in pressure in flowing wells and the various factors involved, there can be no doubt but that this difference in pressure is greatly affected by the amount of gas being produced and the relative slippage in the flow string. While several theories of flow have been proposed and probably exist over some range of operating conditions, in any of these theories the slippage will be an important factor. The pressure drop generally decreases as the gas-oil ratio increases at any one flow rate and at moderate rates of flow will probably decrease as the rate of flow increases. The reason for this is that slippage under most conditions will decrease with the increased rate of flow much more rapidly than the fraction rate increases. The absolute pressure in the tubing column will also be a factor as will the amount of free gas or solution gas, since the amount of fluid in the tubing string will in part depend on the actual volume of gas present.

Figure 3 shows one correlation of a group of data on pressure drop in the flow string versus gas-oil ratio. While this correlation is admittedly not as good as would be desired, it does offer some basis for estimation of probable flowing pressures. Further information as to pressure drop and actual methods by which oil wells flow would be very desirable since they have very definite applications where various flow methods are being considered.

In Figure 2 the pressure drop in the sand at various flow rates for the well shown in Figure 1 has been plotted. This pressure drop in the sand can be taken from Figure 1 where the bottom-hole flowing pressure at various rates is known. The reservoir pressure has in this case been determined by extrapolation of the production curve indicated in Figure 4. In flowing wells it may be found that the production will no longer be proportional to the pressure drop in the formation at the higher rates of flow. The reason for this is probably that at very low bottom-hole flowing pressure most of the gas will be out of solution, and the velocity of this gas, together with any free gas being produced, will increase the flow rate beyond the critical value, and the resulting flow will be turbulent. In this case the curve would tend to flatten out at high rates of flow, indicating a lower maximum production than would be indicated by extrapolation to zero bottom-hole flowing pressure.

One of the applications of bottom-hole-pressure data is to determine the flowing life of a well, that is, to be able to predict when artificial lift will have to be installed. Figure 2 shows a curve marked minimum reservoir pressure at which the well will flow. This reservoir pressure is determined by add-

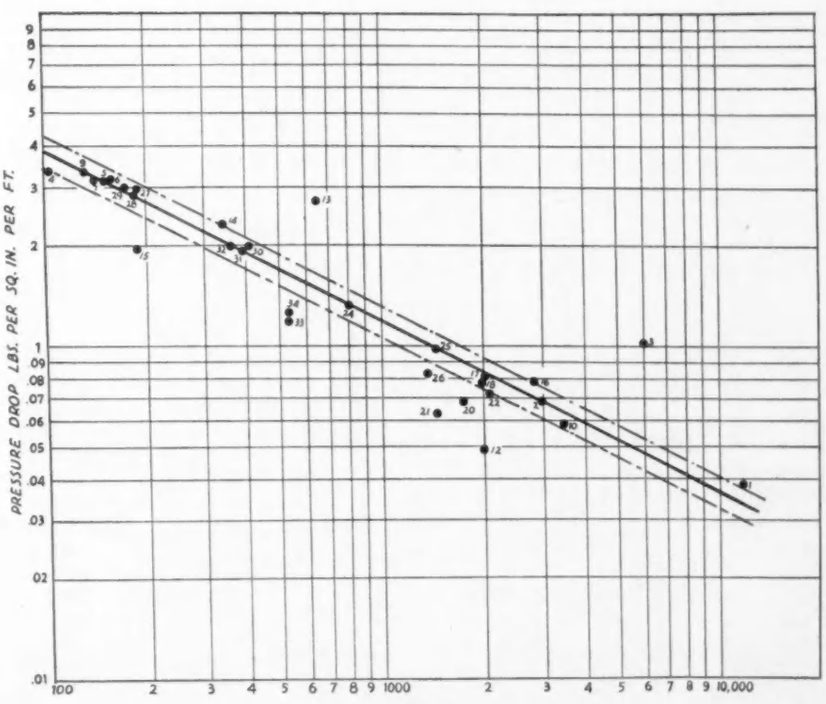


FIGURE 3

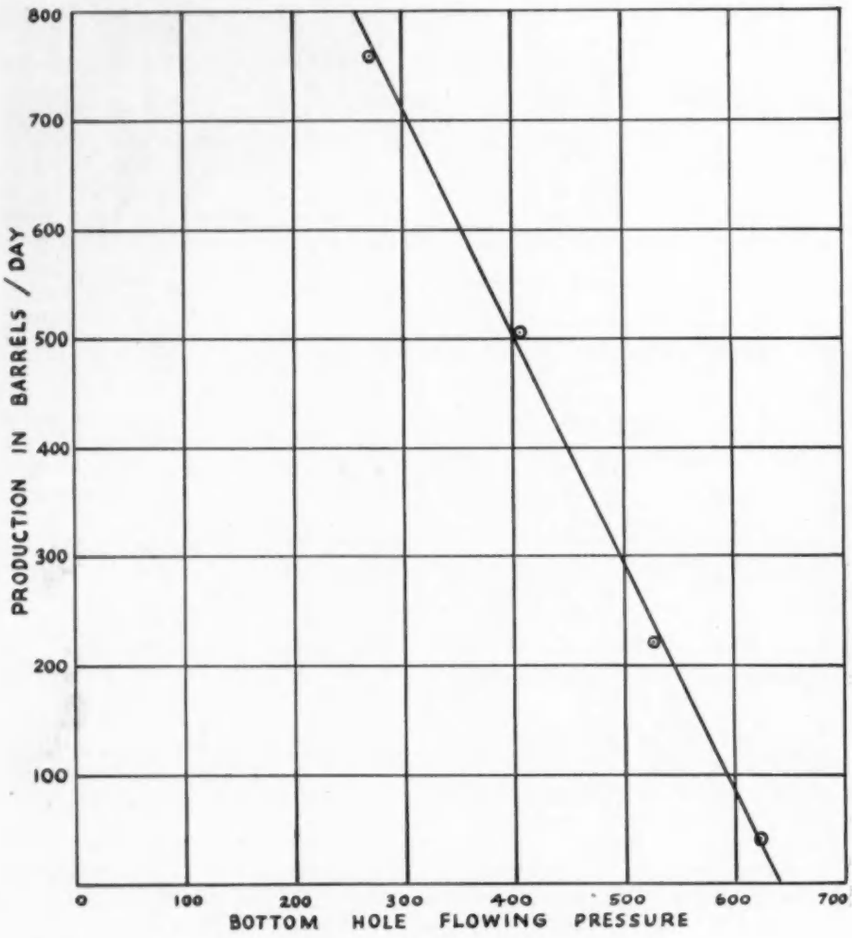


FIGURE 4

ing the pressure drop in the formation at any production rate to the pressure drop in the tubing at the corresponding production rate. In this particular example the well was flowing very nearly at its maximum natural flowing capacity at the highest rate at which it was tested. As is indicated in Figure 1, the back pressure on the tubing at a production of 760 barrels per day is approximately 40 pounds per square inch so that very little additional decrease in bottom-hole pressure could be obtained for increasing the flow rate through the sand by relieving the surface pressure. Figure 2 shows, for example, that if conditions did not change sufficiently to affect the pressure drop in the tubing that the well would be able to produce 200 barrels per day down to a bottom-hole pressure of 350 pounds per square inch.

Figure 5 shows the data on a rather extreme type of well in which the bottom-hole flowing pressure is so close to the saturation pressure that very little gas is released from the oil. In this case the pressure drop in the tubing for only a 1300-foot well is over 400 pounds per square inch. This means that the tubing string is filled with liquid. In this particular well at the production rate of 255 barrels per hour, the pressure drop through the formation was only about 35 pounds per square inch. This well would under these conditions continue to flow until the bottom-hole pressure was within about 35 pounds of pressure drop in the fluid column or about 435 pounds per square inch. Whether or not the well would flow at some lower bottom-hole pressure would depend largely on whether at pressures of about 435 pounds per square inch any gas would come out of the solution.

The example just given indicates the importance of information or methods of predicting the pressure drop in flow string under various methods of flow. If, for example, the introduction of a few hundred cubic feet of gas would lower the pressure drop in the tubing sufficiently, artificial flowing life might be maintained for a long time. If, for example, 300 cubic feet of gas per barrel were introduced in this well, Figure 3 would indicate that the pressure drop in the tubing would be decreased about 150 pounds per square inch, thereby giving a much longer flowing life. If the bottom-hole pressure dropped to such a value that a well would not make its production, some information as to the relative merits or possibilities of such production methods as chokes, flow valves, gas lift, etc., could be obtained by studying the effect of various gas-oil ratios on the pressure drop in the flow string. The success of such lift methods generally depends upon their effect on the pressure drop in the flow string. If, for example, the injection of a few hundred cubic feet per barrel of fluid being produced would bring about an appreciable reduction in the pressure difference required in the flow string to produce the fluid, one of these plans may be entirely feasible. If, however, the amount of gas required to produce an appreciable reduction in

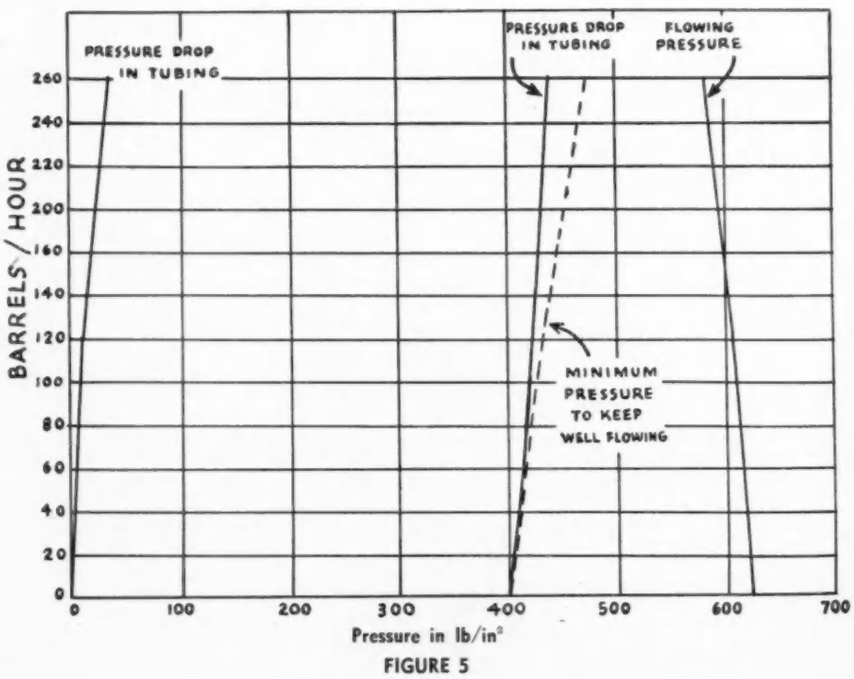
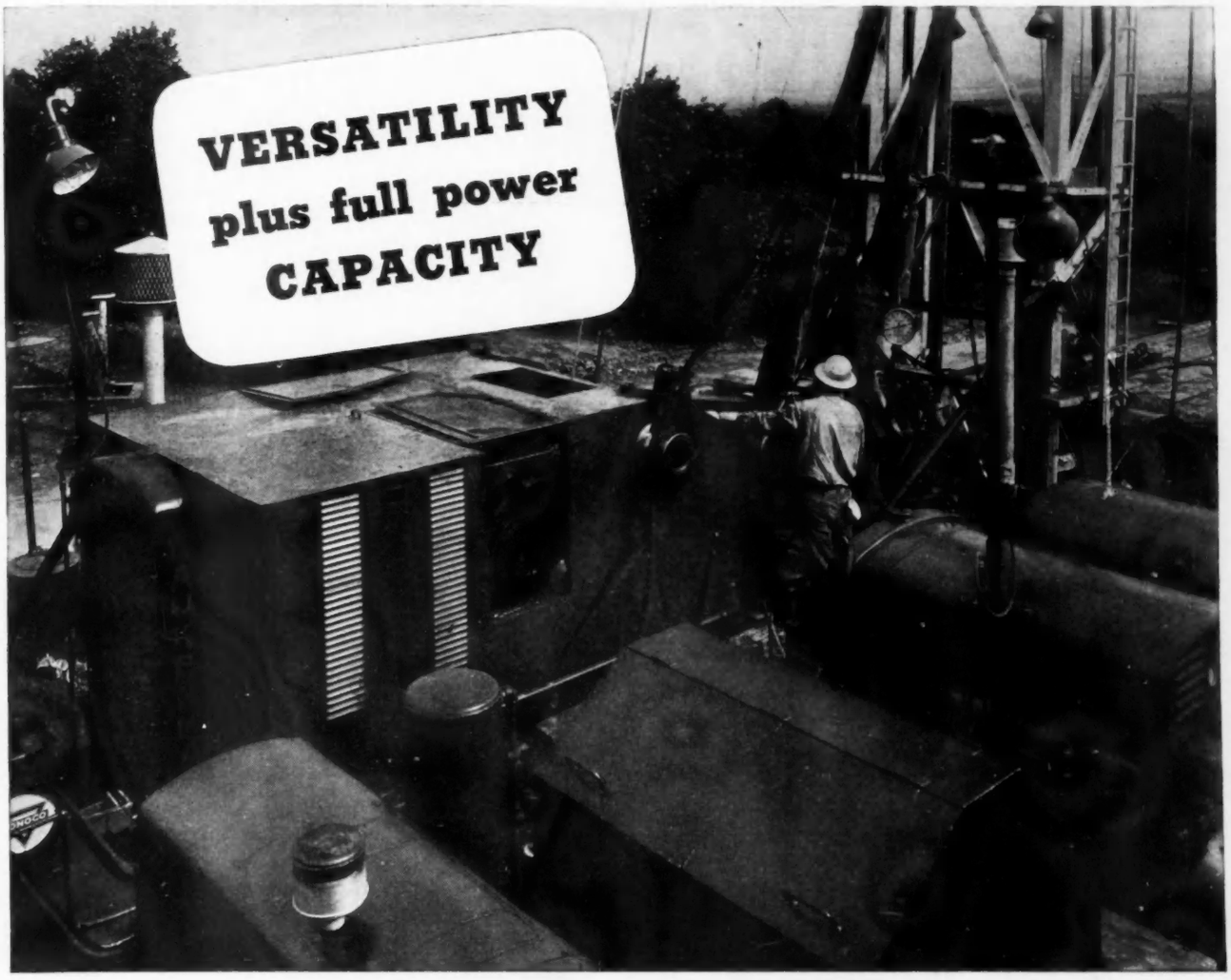


FIGURE 5



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pressure difference in the flow still is excessive, conventional pumping equipment may be the desirable solution.

When a well ceases to flow naturally and is put to pumping, some information as to probable production rate is desirable. As was indicated above, tubing or casing pressure do not necessarily have much relation to actual well performance since the tubing pressure is largely affected by the pressure drop in the tubing. When a bottom-hole-pressure bomb is run in such a well and flow tests taken, curves similar to that shown in Figure 4 can be obtained. Such curves can then be extrapolated to sufficiently low pressures to get at least a general idea as to well capacity. In the case of the well shown in Figure 4, it can be seen that the pumping capacity will not be much more than the flowing capacity, provided the well can be kept flowing. A well with a high pressure drop in the tubing would show a much higher pumping capacity than would be indicated by the flowing rate.

Bottom-hole-pressure tests on flowing wells can be used for determining well potentials. Potentials in the case of flowing wells are more indefinite than for pumping wells. In the latter case the potential as determined by bottom-hole-pressure tests may be a value which is in excess of equipment capacity. Physical difficulties such as excessive gas may prevent actually realizing the indicated maximum well capacity. In the case of flowing wells the potential may refer to the indicated ability of the well to produce, that is the indicated barrels per day which the well will make if produced with zero pressure on the formation. As was pointed out above, the ability of a flowing well to produce depends upon the pressure drop in the tubing as well as upon the static bottom-hole pressure and the effective permeability or productivity-index factor. Any predicted actual ability to produce will depend upon this pressure drop in the tubing. Any reference to potential on flowing wells must therefore be accompanied by the definition of potential if the result is to have meaning.

Potentials on flowing wells may be taken either with bottom-hole-pressure gages or by one of the fluid-level-measuring devices. In cases where considerable gas is produced through the casing, difficulty may be encountered in obtaining an accurate fluid level. Back-pressure methods have however been developed for such purposes and satisfactory tests usually may be obtained by either method.

A Preliminary Investigation of Flowing Wells, by G. A. Poole and E. N. Kemler. A.P.I. Proceedings, 1937.

Industry Continues Drilling 400 Wells Per Week

Despite the difficulties of procuring materials and equipment, the oil industry has continued to complete approximately 400 wells a week, a rate which has prevailed now for four successive months.

Because of increased scarcity of equipment, it is indicated that there may be difficulty in maintaining this rate of development for the remainder of the year. But at the same time, it is doubtful if the government can afford to force any further material curtailment of drilling, in view of the necessity of protecting the ability of the industry to produce the oils that will be indispensable for winning the war. This is particularly true because of somewhat disappointing results this year in finding new fields.

If the recent rates of drilling were maintained during the final 4 months of the year, completions of 1942 would total approximately 21,500.

In the first 8 months, there were 14,772 completions, or 28 percent less than in the like months of last year, as shown in an accompanying table.

During August, United States completions averaged 396 per week, a figure close to the averages of May, June, and July.

Several states became more active in August, including Texas, New Mexico, and Kansas. In contrast, Illinois experienced some curtailment of drilling.

STATE OR DISTRICT	TOTAL RIGS IN OPERATION (Drilling, Rigs Up, Shutdown)				DETAILS OF SEPTEMBER 1, 1942 FIELD ACTIVITY					
					Rigs in Operation			Prelim. Activity		
	Year Ago, Sept. 1, 1941	Month Ago, Aug. 1, 1942	Now, Sept. 1, 1942	Percent Change From Year Ago	Drilling	Rigs Up	Shutdown	Derricks	Locations	Total Operations
Alabama	6	4	2	— 66.6	1	...	1	...	...	2
Arizona	5	...	...	...	...	...	...	...	...	...
Arkansas	34	17	23	— 32.3	21	2	...	...	7	30
California	264	206	205	— 22.3	113	40	52	...	85	290
Colorado	33	26	32	— 3.0	14	1	17	...	2	34
Florida	3	4	4	+ 33.3	3	...	1	...	...	4
Georgia	1	...	...	...	...	...	...	...	...	...
Illinois	494	232	197	— 60.1	144	20	33	...	23	220
Indiana	69	44	51	— 26.0	45	3	3	...	37	88
Iowa	...	1	1	...	...	...	1	...	...	1
Kansas	302	254	235	— 22.1	210	13	12	9	16	260
Kentucky	47	23	21	— 55.3	15	...	6	...	5	26
Louisiana	251	122	111	— 55.7	84	9	18	11	107	229
North Louisiana	103	41	37	— 64.0	23	4	10	4	33	74
South Louisiana	148	81	74	— 50.0	61	5	8	7	74	155
Michigan	130	126	151	+ 16.1	90	22	39	17	21	189
Mississippi	41	16	10	— 75.6	7	3	...	...	4	14
Missouri	9	7	8	— 11.1	1	...	7	...	...	8
Montana	79	55	55	— 30.3	31	4	20	...	5	60
Nebraska	32	24	24	— 25.0	15	...	9	1	3	28
New Mexico	118	114	105	— 11.0	67	3	35	...	18	123
New York	110	125	136	+ 23.6	83	26	27	...	2	138
North Dakota	5	1	1	— 80.0	1	...	...	...	...	1
Ohio	299	273	246	— 17.7	178	25	43	16	42	304
Oklahoma	423	230	244	— 42.3	197	14	33	12	27	283
Oregon	1	...	...	...	...	...	...	...	...	...
Pennsylvania	498	455	412	— 17.2	319	43	50	20	65	497
South Dakota	1	2	3	+200.0	1	1	1	...	1	4
Tennessee	6	3	1	— 83.3	1	...	...	...	2	3
Texas	1,399	674	627	— 55.1	471	32	124	35	347	1,009
East Texas Border Co.'s	15	5	6	— 60.0	5	...	1	...	2	8
East Texas Field	24	...	...	...	...	...	...	...	...	...
Rest of Eastern Texas	74	50	44	— 40.5	35	1	8	4	19	67
North Texas	174	83	92	— 47.1	69	6	17	7	96	195
West Central Texas	101	52	54	— 46.5	31	5	18	3	19	76
West Texas	383	202	189	— 50.6	133	4	52	3	79	271
Texas Panhandle	143	49	54	— 62.2	41	4	9	...	10	64
Gulf Coast, Upper	145	72	66	— 54.4	50	6	10	8	49	123
Gulf Coast, Lower	182	99	90	— 50.5	80	4	6	5	45	140
Southwest Texas	98	29	23	— 76.5	20	2	1	3	22	48
South Central Texas	60	33	9	— 85.0	7	...	2	2	6	17
Utah	5	...	2	— 60.0	1	...	1	...	...	2
West Virginia	289	81	47	— 83.7	33	7	7	3	7	57
Wyoming	73	60	53	— 27.3	28	2	23	1	2	56
Total United States	5,027	3,179	3,007	— 40.1	2,174	270	563	125	828	3,960

State or District	MONTHLY COMPLETIONS										CUMULATIVE COMPLETIONS: FIRST 8 MONTHS									
	Total			Details for August, 1942							Total			Details for 8 Months of 1942						
				New Wells Drilled for Oil or Gas					Old Wells Drilled Deeper	Total Footage Drilled				New Wells Drilled for Oil or Gas					Old Wells Drilled Deeper	Total Footage Drilled
	Year Ago, August, 1941[2]	Month Ago, July, 1942[3]	Latest Data (Aug., 1942)[1]	Oil	Gas	Distillate	Dry	Others[6]			1941[4]	1942[5]	Percent Change in Weekly Average	Oil	Gas	Distillate	Dry	Others[6]		
Alabama	...	...	...	...	...	...	...	...	...	...	1	3	+193.1	...	...	...	3	...	...	4,697
Arizona	...	...	2	...	...	...	2	...	...	6,662	...	2	...	...	...	...	2	...	...	6,662
Arkansas	16	8	10	6	...	...	4	...	...	73,147	109	84	— 25.1	55	...	1	28	...	...	507,550
California[7]	105	60	46	32	1	...	13	...	...	234,460	742	492	— 35.5	290	9	...	175	...	18	2,507,451
Colorado	1	2	1	1	...	...	...	...	...	2,492	11	8	— 29.7	4	1	...	3	...	...	38,530
Georgia	...	...	...	...	...	...	...	...	...	...	1	2	+ 96.5	...	...	...	2	...	...	6,519
Illinois[8]	375	[9]223	220	120	3	...	94	...	3	572,161	2,381	1,374	— 43.9	737	11	...	546	21	59	3,468,198
Indiana	51	29	34	14	1	...	17	...	2	51,894	351	257	— 28.8	90	14	...	140	...	13	424,730
Iowa	3	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...
Kansas	195	123	176	90	8	...	72	1	5	544,958	1,438	1,088	— 26.5	574	51	...	403	9	51	3,295,240
Kentucky	25	10	13	5	...	...	6	...	2	18,860	196	95	— 52.9	33	...	...	56	1	5	129,246
Louisiana	111	72	81	54	1	2	24	...	...	568,949	914	668	— 29.0	441	14	7	206	...	...	4,476,204
North Louisiana	53	37	35	27	...	1	7	...	...	166,791	352	303	— 6.7	206	4	3	90	...	...	1,246,700
South Louisiana	58	35	46	27	1	1	17	...	...	402,158	562	365	— 36.9	235	10	4	116	...	...	3,229,504
Michigan	60	47	68	28	13	...	27	...	...	169,976	517	460	— 13.5	228	54	...	177	...	1	1,158,234
Mississippi	15	4	7	1	...	...	6	...	...	38,271	117	76	— 36.9	33	...	...	42	1	...	396,821
Missouri[10]	8	1	4	...	...	...	4	...	...	5,473	48	21	— 57.4	...	3	...	18	...	...	13,304
Montana	20	19	35	17	15	...	3	...	...	69,043	129	137	+ 3.1	88	34	...	15	...	...	306,774
Nebraska	11	1	1	...	...	...	1	...	...	3,582	56	27	— 53.1	11	...	...	15	...	1	62,572
New Mexico	35	26	42	23	1	...	18	...	...	117,315	235	272	+ 12.4	182	9	...	75	...	6	750,779
New York	85	107	138	79	1	...	1	57	...	189,784	582	817	+ 36.3	461	3	...	1	352	...	1,059,161
Ohio	134	88	95	32	42	...	20	...	1	218,173	1,061	722	— 1.8	161	325	...	215	7	14	1,670,897
Oklahoma	194	101	131	56	8	...	53	3	11	433,759	1,384	989	— 30.5	434	60	...	380	25	90	2,983,773
Pennsylvania[11]	341	360	346	163	23	...	13	144	3	581,776	2,620	2,685	+ 0.4	1,265	192	...	71	1,135	22	4,456,313
Tennessee[12]	3	...	1	...	...	...	1	...	...	1,923	14	8	— 44.5	1	2	...	5	...	...	12,240
Texas	915	306	447	245	20	2	156	10	14	1,921,754	6,569	3,936	— 41.7	2,462	114	44	1,176	37	103	16,252,904
E. Tex. Border Co.'s	2	...	2	1	1	...	...	...	...	13,100	18	9	— 51.4	3	3	...	3	...	...	47,787
East Texas Field	39	...	1	1	...	...	...	...	...	3,727	399	16	— 96.1	10	...	...	5	1	...	54,498
Rest of East Texas	36	29	48	24	...	...	21	1	2	214,731	326	277	— 17.4	164	4	7	94	3	5	1,326,603
North Texas	228	60	80	29	3	...	34	9	5	220,197	1,602	665	— 59.6	290	5	1	300	31	38	1,682,987
West Central Texas	58	29	33	14	2	...	16	...	1	72,227	397	263	— 35.6	103	15	...	135	...	10	576,006
West Texas	225	80	111	91	...	...	15	...	5	462,155	1,413	1,103	— 24.1	904	11	...	149	...	39	4,608,913
Texas Panhandle	73	23	29	16	8	...	4	...	1	85,256	403	284	— 31.5	223	42	...	13	...	6	846,784
Gulf Coast, Upper	68	21	52	25	5	...	22	...	...	387,105	506	345	— 33.7	223	13	4	104	1	...	2,308,368
Gulf Coast, Lower	103	37	64	38	1	2	23	...	...	369,452	795	595	— 27.2	383	14	31	164	...	3	3,552,238
Southwest Texas	61	22	23	5	...	...	18	...	...	87,005	537	300	— 45.7	135	5	1	156	1	2	1,034,139
South Central Texas	22	5	4	1	...	...	3	...	...	6,799	173	79	— 55.6	24	2	...	53	...	...	214,581
Utah	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Virginia	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	1,113
West Virginia	50	69	72	8	53	...	7	...	4	225,274	428	490	+ 11.2	73	320	...	60	...	37	1,459,496
Wyoming	20	9	12	8	1	...	3	...	...	50,447	88	58	— 35.9	41	3	...	12	1	1	213,439
Total United States	2,773	1,665	1,982	982	191	4	545	215	45	6,100,133	19,998	14,772	— 28.2	7,665	1,219	52	3,826	1,589	421	45,662,847

[1] Wells completed in 5 weeks, or 35 days, ended August 29, 1942. [2] Wells completed in 4 weeks, or 28 days, ended August 23, 1941. [3] Wells completed in 4 weeks, or 28 days, ended July 25, 1942. [4] Wells completed in 34 weeks, or 238 days, ended August 23, 1941. [5] Wells completed in 35 weeks, or 245 days, ended August 29, 1942. [6] Water input, gas injection, and salt water disposal wells. [7] California figures from American Petroleum Institute except for August, 1942. [8] Data on new wells from Illinois Geological Survey beginning January, 1942, except for August. [9] Illinois statistics for July revised to embody State Geological Survey data on new wells. [10] Figures from Missouri Geological Survey. [11] Bradford and Kane-Clarendon, Pennsylvania, figures from The Producers Monthly. [12] Figures from Tennessee Division of Geology.

[*Continued from page 12*]

bined salt water disposal and pressure maintenance project, expected to boost the ultimate recovery from the field by at least 200,000,000 barrels, to be undertaken by the East Texas Salt Water Disposal Company, composed of various operators in the field. This unit will consist of 6 injection wells which will return 90,000 barrels of water to the sand daily, and construction is scheduled to start about January 1 and be completed in 6 to 8 months at an estimated cost of around a half-million dollars.

Later, it was said, the program will be expanded by the construction of additional facilities to quadruple the injection, and it is also proposed to purchase existing facilities with a capacity of 160,000 barrels daily of which 80,000 barrels now are being utilized.

The project was announced by Coordinator Ickes, who disclosed that the East Texas field not only is one of the principal producers of oil for the war effort but is expected to supply a substantial part of the oil to be shipped into the Eastern States this winter through the "big-inch" line now under construction.

"It is essential, therefore," Ickes explained, "that the field be operated in an efficient manner so that it can continue to contribute its quota of petroleum for the duration of the conflict. The project is essential to assure just that."

The plan calls for the return of water to the lower part of the Woodbine sand to maintain bottom-hole pressures, which Deputy Coordinator Davies said have been so reduced within recent years that engineers estimate that unless water is reintroduced into the formation the field will yield from 200,000,000 to 800,000,000 barrels less than if pressures are maintained at proper levels, and pumping, with its need for critical materials, would be hastened.

Davies explained that in designing the project, construction engineers have avoided the use of critical materials to the "greatest possible" extent and will use much second-hand material, where available.

At present, he said, the East Texas field is producing about 450,000 barrels of salt water daily, which is in excess of current oil production, and the rate of water output is increasing with the same effect on reduction of pressure as would be caused by the withdrawal of an equivalent amount of oil.

"From the standpoint of saving this oil, expenditures for steel will be a far better exchange of steel for oil than could be effected elsewhere in the petroleum industry," he said.

FINANCING: Formal announcement of a decision to have the Defense Supplies Corporation finance the $1,250,000 Tiffin-Akron pipe line which is to link the Shell and Standard (Ohio) systems of the movement of 15,000 barrels of products daily for transfer at Akron to the Sun-Susquehanna line was made by Secretary of Commerce Jesse Jones September 10.

The eight-inch line of second-hand pipe will be constructed by Ohio Emergency Pipe Line, Inc., formed by Shell Pipeline Co., Standard (Ohio) and Sun Oil Company, and will be operated by it as agent of the government upon its completion. It is estimated that 60 days will be required for construction of the line.

FLORIDA PIPE LINE: Laying of pipe for the government-owned trans-Florida pipe line to run from Carabelle to Jacksonville is expected to start about October 1 and completed by December 15, it was announced by OPC September 8.

Some 50 miles of the eight-inch second-hand pipe which is to be used for the line has already been disinterred in Texas and is being prepared for shipment within the next few days; thereafter, weekly shipments of 30 miles of pipe will be made until the required quantity of about 185 miles has been moved to location. Three storage tanks, with a total capacity of 172,500 barrels, have been dismantled and are now enroute to Florida and about half of the required pumping facilities also have been dismantled and will be shipped shortly.

Bids for the construction will be opened September 15 by the Trans-Florida Pipeline Corporation, which is in charge of the project for the government.

With completion of the line in December, 35,000 barrels of products will be delivered daily to Jacksonville for distribution by barge to consuming centers along the Atlantic intracoastal waterway as far north as Virginia.

TANKER RATES: New rates and surcharges for tanker cargoes have been announced by the War Shipping Administration, effective immediately.

Voyage charter rates for gasoline and kerosine from Aruba and Curacao, etc., have been fixed at 40 cents per barrel and 521 percent to one Atlantic port north of Cape Hatteras but not east of New York, for export; 43 cents and 736 percent to the Portland pipe line for export, and 44 cents and 680 percent to Halifax, Nova Scotia; from Cartagena or Covenas, 41.5 cents and 575 percent to one Atlantic port, 44.5 cents and 780 percent to Portland, and 45.5 cents and 725 percent to Halifax; from Trinidad, Caripito or Guiria, 45 cents and 551 percent to an Atlantic port, 47 cents and 760 percent to Portland, and 47 cents and 726 percent to Halifax; and from Tampico, 44 cents and 600 percent to an Atlantic port, 49 cents and 755 percent to Portland and 53 cents and 660 percent to Halifax.

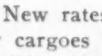
From one U. S. Gulf port, a rate of 40 cents and a surcharge of 561 percent is provided to one Atlantic port, 45 cents and 734 percent to Portland, and 49 cents and 633 percent to Halifax.

On the Pacific Coast, a rate schedule ranging from $7.20 to $8.34 per ton and surcharges from 82 to 91 percent is provided for cargoes from Los Angeles to Chilean ports.

From the West Coast to the East, rates are set of 97 cents per barrel to one Gulf port and $1.08 to one Atlantic port from Los Angeles; $1 and $1.11 from Santa Barbara; $1.01 and $1.12 from Port San Luis; $1.02 and $1.13 from Monterey Moss Landing, and $1.03 and $1.14 from San Francisco. From the same area rates of 28.5 cents per barrel and surcharges of 54 percent are set from Los Angeles to Vancouver or Ioco, British Columbia; 26 cents and 52 percent from Port San Luis, and 23 cents and 54 percent from San Francisco.

ABANDONMENTS: A total of 532 requests for permission to abandon wells has been approved by OPC since Recommendation 47, requiring authority for abandonments, was issued April 21. Three requests have been rejected.

Analysis of 509 abandonment cases showed that the production of the wells averaged 3½ barrels of oil and 196 barrels of water daily, and that the materials salvaged averaged 49.9 tons per well, and have been used principally in drilling and completing new wells.



ETHER: Dichlorethyl ether, used principally as a selective solvent for purifying lubrication oils and butadiene, has been placed under complete allocation and use control by orders of the War Production Board.

Effective from September 5, no per-

son may deliver, accept delivery of, or use dichlorethyl ether without specific authorization by the director general for operations. Unlike most allocation orders, which exempt deliveries of small quantities of a controlled material, no exception is made for small quantities.

Military needs for oils treated with the material are great, it was explained, and the synthetic-rubber program will require large, but as yet not precisely determined, amounts for purification of butadiene, and allocation and use control is deemed necessary to prevent the diversion of the present supply to non-essential uses.

Initial requirements of dichlorethyl ether in new butadiene plants are substantially greater than needs after the plants are in operation, so it is deemed imperative that stocks be accumulated to enable plants now under construction to begin operating immediately on completion.

RUBBER CONTRIBUTION: Nearly $3,000,000, representing the "margin" received by the oil companies for scrap rubber donated or sold to them at 1 cent per pound and resold to the Rubber Reserve Company at $25 per ton, will be equally distributed between the American Red Cross, the United Service Organizations, Army Relief and Navy Relief within the next few weeks.

Distribution of the money was discussed at the September meeting of PIWC, where it was reported that state directors of a number of organizations had sought to have their share of the fund turned over to them directly for local work. Because of the wide variance in collections in the several states, however, it was decided to turn the money over to the national offices of the four organizations, for such distribution or use as they deemed best.

Figures on the actual financial return from the rubber drive have not yet been compiled and will not be completed until final shipments to the government have been concluded. However, the 450,000 tons of scrap rubber garnered by the oil companies will represent well over $2,000,000 in "margins," the exact figure, of course, depending upon how much was donated outright and from which the relief organizations will get the full $25 per ton paid by Rubber Reserve Company.

The money turned over to the four organizations will represent contribution of fully that much by the oil industry, which itself bore all expenses of the drive—advertising, employment of extra personnel, truck hire and other costs.

Early Nationwide Gasoline Rationing Likely

[*Continued from page 14*]

tion and purification of butadiene from oil shall be under the direction of the rubber administrator.

"The Petroleum Coordinator shall supervise the operation of these plants, after construction, but he shall not change the presently authorized program (or plans for operation) except as approved by the rubber administrator.

"Delegating this added responsibility to the Petroleum Coordinator of the butadiene-from-oil program with other petroleum and natural gas requirements, especially for aviation gasoline and for toluene for explosives."

The committee devoted a whole section of its report to a discussion of the manner in which the rubber problem has been handled, commenting:

"While the committee has not sought to revoke the mistakes of the past, it is concerned with the question of whether the present administrative organization is such as to insure the executive carrying through of the program. It is not.

"The committee finds a number of different government agencies with overlapping and confusing authority over the synthetic rubber program. The conflict between the Rubber Reserve Co., a subsidiary of the Reconstruction Finance Corp., and the Office of Petroleum Coordinator has delayed and complicated the bringing in of new facilities for the production of butadiene from oil.

"To make Buna-S rubber, the synthetic around which the government's program has been built primarily, three separate kinds of plants must be erected, for producing styrene, for producing butadiene and for combining the two.

"At present the butadiene part of the program is lagging behind the styrene and polymerization capacity. Thus, any delay in getting the greatest possible butadiene production directly reduces the amount of synthetic rubber that will be produced.

"The production of synthetic rubber represents an investment exceeding $600,000,000 and is one of the most complicated technical projects ever undertaken in this country. Yet, in none of the government agencies has there been a clearly recognized group of independent experts to make the technical decisions. Reliance has been placed on a part-time technical adviser, aided by committees drawn from industry.

"This technical adviser has testified that on more than one occasion he requested the appointment of an adequate technical staff, in vain. The committee has found many evidences of procedures bordering on the chaotic in which non-technical men have made decisions without consulting with subordinates nominally in the positions of responsibility.

"There have been many adjustments and readjustments in the synthetic rubber program. Some of these were inevitable. Some appear to be the result of bad administration.

Had Russian Offer

"One example of inexplicable administration that we can mention is the failure to obtain detailed technical information concerning the experience of Soviet Russia in making synthetic rubber. Russia has been manufacturing synthetic rubber successfully for more than 10 years. Had the offer of the Soviet Government made in February to exchange full information been accepted, it is conceivable that plants for producing synthetic rubber by the Russian processes might well be on the way to completion.

"To date we have no detailed information as to the Russian experience, nor analysis on Russian tires. We feel this information should still be obtained. One of the more critical battles that must be won is in the compounding of synthetic rubber. Synthetic rubber requires more time and effort to fabricate into tires—about one-third less efficiency is reported. While tires for light passenger cars can be made entirely out of Buna-S, thus far in the manufacture of combat and heavy duty tires, which represent about 70 percent of the army's requirements, a good percentage of crude natural rubber must still be used.

"As long as crude rubber must be mixed with Buna-S we do not care to cut too deeply into our stocks of crude rubber — a minimum carry-over into 1944 of 100,000 tons is vital.

"However, the dissemination of technical information on the compounding of Buna-S to all rubber companies has become an accomplished fact only in the last few days. On July 3 of this year an agreement was entered into between the Rubber Reserve Company and four large rubber companies, by which Rubber Reserve alone was permitted to give out information on compounding to other companies.

"It took six weeks of repeated effort

for the rubber branch of the War Production Board, desiring to launch a program of education throughout the industry, to get this vital information released by the Rubber Reserve."

The committee investigated the present government program and expressed the belief that every one of the processes is technically sound and ultimately will work, but held that many other processes not now in the government schedule, which were also studied, do not give sufficient certainty of producing more rubber quickly enough to warrant substitution for processes already in the program.

Under the government program, it said, if present construction commitments can be met on the dates specified and technical difficulties in reaching full production are overcome, the 1943 production will include 400,000 tons of Buna-S; 30,000 tons of Neoprene (in part from private sources); 62,000 tons of Butyl rubber and 20,000 tons of Thiokol (from private sources).

It was pointed out, however, that only Buna-S and Neoprene can be used for combat and heavy-duty tires, although between them these two synthetics and a portion of the Butyl rubber could offset the likely deficit of crude rubber which we face next year. But there is grave danger, under present priorities and allocation, it was asserted, that the construction of the synthetic program may be delayed by as much as four months, in which event the production of Buna-S in 1943 will fall below 200,000 tons and our supplies of rubber will be inadequate for military needs.

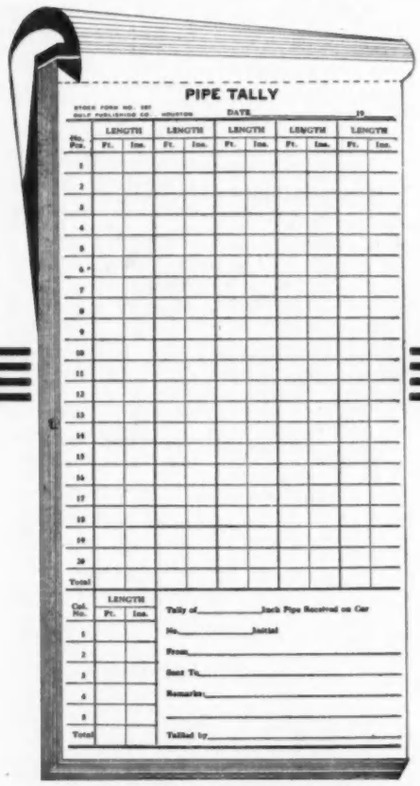
"The year 1943 is so critical for the rubber situation that the production of 100,000 or 200,000 tons of Buna-S may be the determining factor in the success of our military program. To add a greater margin of safety to the program the committee recommends these additions:

"(A) An increase in the production of butadiene by 100,000 tons, to be obtained from a refinery conversion program, more commonly known as 'quick butadiene.' This process utilizes refinery equipment made idle by the lessened demand for gasoline and which can be brought into production in six months. Since butadiene output is lagging behind styrene and polymerization capacity, if this additional butadiene can be made available quickly enough, an additional 40,000 to 50,000 tons of synthetic rubber could be produced in the critical year of 1943.

"This extra butadiene, too, would furnish insurance against possible difficulties with other plants and be a stand-by capacity as a reserve for the future. To be of greatest value this butadiene should be brought into production by next Spring. Delay on the part of the government can turn this 'quick butadiene' into slow butadiene.

"The committee is concerned by the efforts on the part of many persons to substitute this so-called 'quick-butadiene' process for the regular butadiene plants scheduled in the government's program. The first thought that occurs to the committee is, Why now? Why not months ago? Why the sudden activity? And above all, Why substitute at this late date? The committee recommends the quick butadiene program as an addition to, not a substitution for, the present program.

"(B) In addition to the increase provided for through the refinery conversion program, the committee recommends another increase of 30,000 tons of Buna-S. This should come from a plant to be erected during the latter part of 1943 to come into operation early in 1944."



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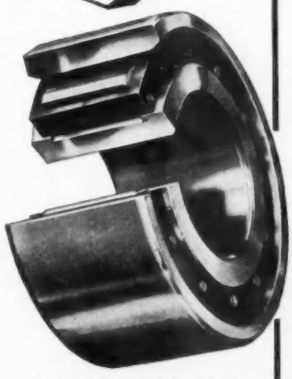

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PRACTICAL OPERATING *Hints* FOR

1. *BELT DRIVES*

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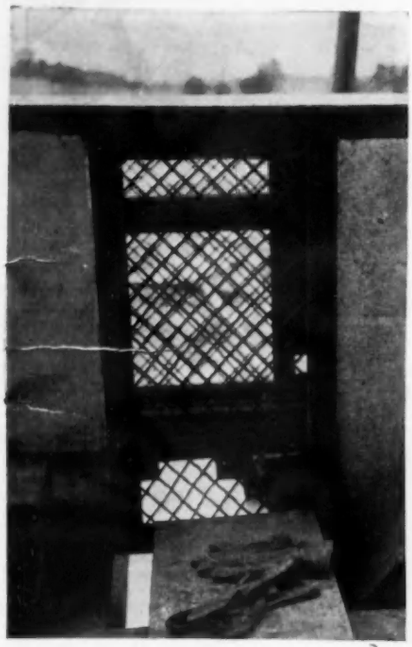


Panel of woven wire mesh welded into stiffener webs of sheet metal guard aids survey of belt status.

TO PERMIT quick check of V-belt tension and inspection of the individual drive units without stopping the rig, one drilling contractor slightly changed the belt guard over the drive from engines to drawworks.

By cutting out a panel in the steel sides of the guard, and reinforcing the edges thus formed with a light channel, a frame was provided into which could be welded a rectangle of woven wire mesh. Through this mesh the belts could be observed readily, and signs of breakdown detected before drive failure.

The heavy wire of the mesh was ample to prevent damage to the belt through dropping of tools or other operating mishap, and the guard sufficiently reinforced by the channel framing for the wire to be stronger than as originally built.

THE practical operating hints for the drilling rig, production man and pipeliner, appearing regularly in these pages, are secured from oil operations everywhere and offer suggestions that will help to improve operating efficiency and safety.

The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, The Oil Weekly, Houston."

2. *GADGETS*

Drilling Chain Link Serves as Support

MANY companies find it convenient to install sheeting around the floor of certain drilling wells to protect the men on the floor from winter winds, or rain and sand storms during summer months.

Pipe rail at dog-house sill carries roller of chain let into base of door and permits easy handling.

Doorways in such enclosures usually consist of only a piece of canvas or a loosely hung piece of sheeting.

A much more satisfactory and inexpensive method of installing a sliding door in such an enclosure was devised by the foreman of one company. It consists of allowing the door to slide along a short piece of 1-inch pipe laid on the floor. The bearing on the bottom of the door is a salvaged rotary chain link which is bolted in a vertical position to the framework. It is installed in such a way that it can not turn over when the thrust of opening or closing the door is exerted upon it.

While admitting that this arrangement is not as efficient or smoothly operating as a roller-equipped door, the rotary chain link moving along the small pipe presents a minimum of surface and the resulting friction is very low. It amply serves the needs of the rotary crew, and installation cost and materials used are relatively insignificant.

3. *HOUSING*

Fender Rail Protects Against Winch Line

THE corrugated metal roofing on the driller's dog house is frequently torn loose during shifts of locations, and when turned down over the eaves of the house in the usual manner offers a hazard which not infrequently results is dangerous cuts and other injuries to crew members.

One contractor safeguards his men and prolongs the useful life of the cor-

A railing of 2x4-inch oak, beveled at the top, is bolted onto the siding of this tool house, completely covering the turned-down edge of the corrugated roofing and fending off damage.

THE DRILLING RIG

rugated metal by bolting a buffer strip around the house at the eaves line. The strip, of 2 x 4 oak, is bevelled to roof angle at the top, so as to permit rain to run off without hindrance, while the normal interstices between corrugations of the metal edge turned down and tacked before placing the buffer take care of slight run-offs.

Such a buffer strip keeps the winch line or lifting sling free of the roofing material, and also serves as bumper against truck cab or other heavy equipment being transported at the same time as is the house.

4. MUD HOSE

Serving With Line Avoids Chafed Case

MANY companies now use a short piece of discarded rotary hose to connect mud pump lines with the base of the derrick standpipe. This speeds up installation considerably, since it often is necessary to confine the line to a very small space beside or underneath the derrick.

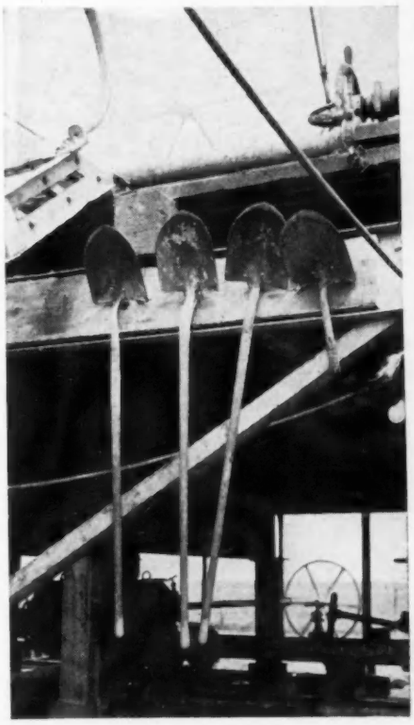
The only disadvantage to this method of connecting the mud lines is the danger of cutting or wearing the line against sharp corners or hot surfaces of engines against which it might come in contact. To prevent such wear and chafing, one company wraps the affected areas with short lengths of discarded manila line. This cordage is of little value for other purposes, and it will serve in this capacity for many months of drilling operations.

Wrapping mud hose at points exposed to chafing prevents premature wear and enables vibrations to be snubbed

5. TOOL CARE

Rack on Foundation Safeguards Shovels

A SECTION of 2 x 10, fitted into the channel beam forming the support for the derrick floor, may be used to advantage for storing such tools as shovels, hoes, rakes and other hand tools used around the rig. Pairs of 20-penny nails, driven into the timber at intervals,



Bolted within the web of the derrick frame, this board carries nails for supporting tools conveniently at hand

provide hangers for the tools, and hold them firmly, yet permitting instant release if necessary.

By mounting the rack in the channel, either by bolting through specially drilled holes or by wiring in place, the tools are kept out of the way, with the handles ready to hand when needed on the ground. The tools are available from the working floor, without taking up any of the space there, and may be washed off, in place, with the usual derrick service hose.

Tools kept on such a rack last much longer than those left lying around on the ground, to rust, become lost, or to be broken or damaged if run over by trucks.

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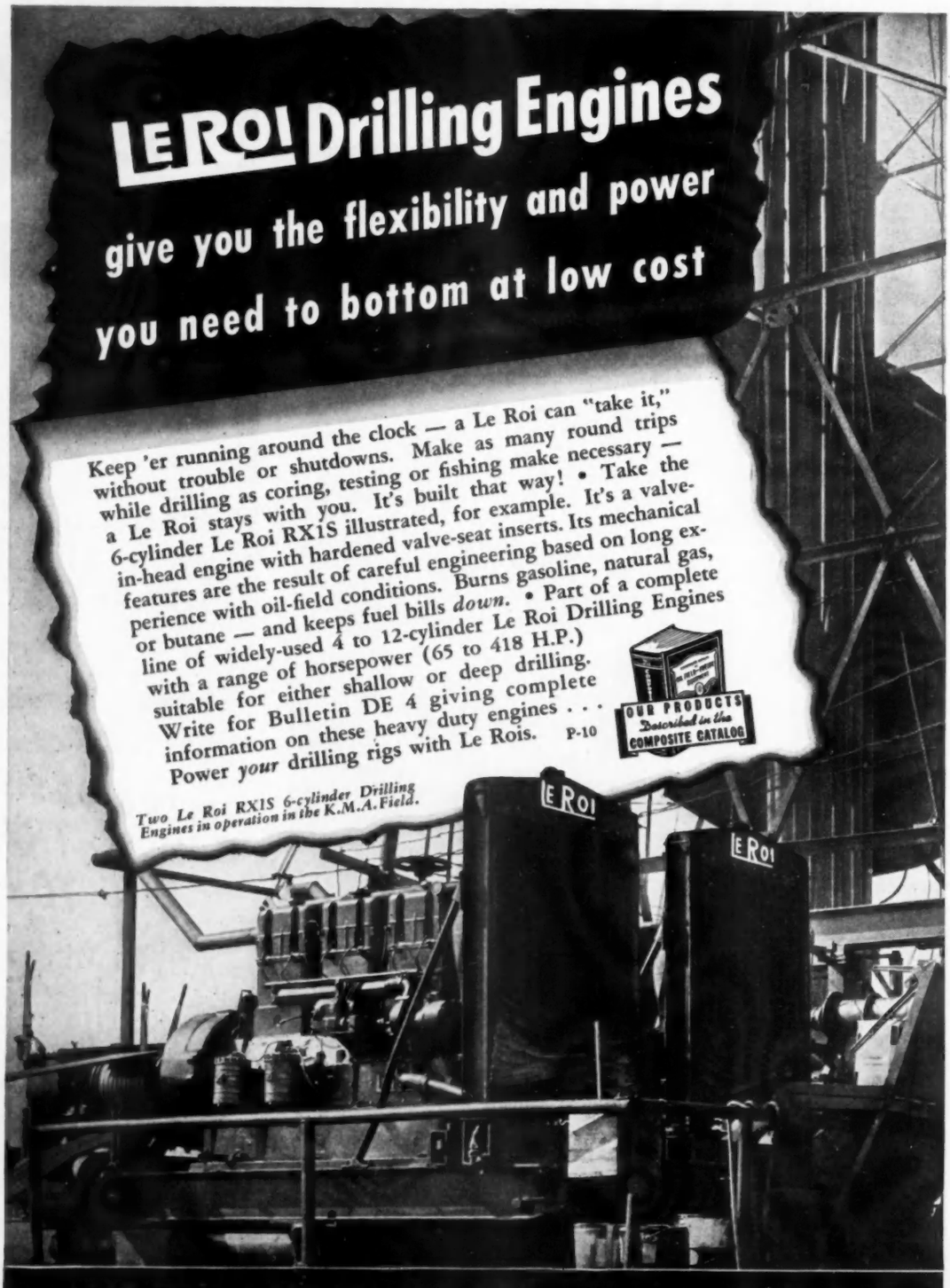

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The Week's News

Southern California AIME Technical Session in October

Featuring the study of modern recovery methods and factors affecting the efficient production of oil and gas, the Petroleum Division of the American Institute of Mining and Metallurgical Engineers, Southern California Section, will hold its annual two-day session at the Ambassador Hotel, Los Angeles, October 15 and 16.

Lt. Commander Harry P. Stolz, chairman of the National Petroleum Division of the Institute, will call the meeting together for its program of technical papers in the Ambassador theatre Thursday afternoon.

"It is clear," says Lt. Commander Stolz, "that the oil industry has stepped forward admirably to assume the great responsibilities brought by the war, and this can be traced to the concerted work of individuals within the industry. To the extent that this is a technical war and largely a battle for oil at present, each petroleum engineer and geologist owes it to the community to devote his best talents and efforts toward getting the oil above ground and to the bases where it is needed. The Pacific theatre of war makes the California operators particularly aware of these responsibilities. Gasolines, butadienes for rubber, lubricating oils, fuel oils, all are absolute necessities. Our meeting in Los Angeles will be directed toward the latest technical procedures and practice for increasing recovery and gaining the most from our reserves of oil and natural gas."

Papers and discussions to be presented by engineers will be open to the public. A dinner for members of the institute has been arranged for Friday evening at the hotel, by C. P. Watson, chairman of the Southern California Section of AIME, where the local Section will be hosts. At the dinner, a prominent oil executive will address the members on a subject to be announced later. According to Leigh Battson and George Nilsson, in charge of arrangements, a brief appropriate entertainment is scheduled to follow the dinner.

The program of technical papers has been drawn up by E. G. Trostel, assisted by Lawrence E. Porter, Howard C. Pyle, Prof. John F. Dodge, John E. Sherborne, James T. Carriell, Robert B. Moran, Ralph M. Marshall, H. K. Armstrong, Charles R. Dodson, Harold T. Wyatt, and Lt. Commander V. H. Wilhelm.

Pyle and Dodson will preside as chairmen over the Thursday afternoon session, following the opening talk by Lt. Commander Stolz. The program of Friday morning will be sponsored by junior members and will be presided over by John Sherborne and James T. Carriell, chairman of the Junior Members. The closing afternoon session, which may be directed toward the ecnomics of modern recovery methods, will be under the direction of Lawrence E. Porter, chairman, and Prof. John F. Dodge, co-chairman.

Prior to the meeting of Thursday afternoon, a luncheon for officers and speakers for the day will be held at the hotel, and similarly there will be a breakfast for officers and speakers of the second day prior to the session of Friday morning.

Chairmen of the various committees in charge are as follows: C. P. Watson, Chairman Southern California Section; Lt. Comm. Harry P. Stolz, Chairman Petroleum Division; E. G. Trostel, Assoc. Chairman, papers and program committee; George W. Nilsson and Leigh M. Battson, committee on arrangements and entertainment; Dwight Whiting, Clarence J. Coberly, finance committee; Walker S. Clute, publicity chairman; and Walter Abel, secretary and treasurer.

API Revised Edition On Drilling Fluids

A revised second edition of its code of recommended practice on standard field procedure for testing drilling fluids has been issued by the American Petroleum Institute's Division of Production.

The new edition incorporates changes in the stipulations added for mud balance, and for Stormer viscosimeter; augments the stipulations on the elutriation method for sand determination and adds a screen test; augments the hydrogen-ion determination; adds sections on filtration and wall-building properties; revises stipulations on shear strength; and adds a new section on salt content. The changes were adopted at the Institute's 22nd annual meeting at San Francisco.

Copies of the revised edition, API Code No. 29: "Recommended Practice on Standard Field Procedure for Testing Drilling Fluids (Tentative)," may be obtained from the Institute at New York or 1205 Continental Building, Dallas, Texas. Price is 50 cents.

News Index

Washington 11
Markets-Statistics 55
Men in the News 69
United States Field Operations:
Arkansas 66
California 67
East Texas 63
Eastern States 68
Illinois 57
Indiana 57
Kansas 60
Louisiana 65
Michigan 67
Mississippi 66
Montana 66
New Mexico 60
New York 68
North Texas 62
Ohio 68
Oklahoma 58
Pennsylvania 68
Rocky Mountain 66
Southwest Texas 64
Texas Gulf Coast 64
Texas Panhandle 61
West Texas 61
West Central Texas 62
West Virginia 68
Wyoming 66

Compact Meeting Will Hear Authorities on Gas

Speakers, known nationally and internationally, for their accomplishments in natural gas use and conservation, will feature the program of the Interstate Oil Compact Commission in the Palmer House at Chicago, October 1-3, Secretary Chas. L. Orr announced September 10.

Dr. Gustav Egloff, director of research for Universal Oil Products Company, Chicago, internationally known for his research work, has accepted an invitation to speak. His subject will be: "Present and Future Gas Utilization for Synthetic Products."

N. C. McGowen, president of United Gas Pipe Line Company, Shreveport, an outstanding authority on natural gas distribution, will discuss expanding pipeline facilities for industrial and domestic use of natural gas. He is now chairman of District 3, OPC, Natural Gas committee.

"The Development of the Liquefied Petroleum Gas Industry," is the subject chosen by G. L. Brennan, manager of the liquefied petroleum gas division of the Warren Petroleum Company, Tulsa. He has participated in the growth of this industry since its infancy.

Ralph E. Davis, Pittsburgh, consulting engineer, an authority on gas reserves, will survey present and potential gas reserves of the nation.

R. A. Cattell, chief engineer of the Petroleum and Natural Gas Division of the Bureau of Mines has been invited to review the research work of the Bureau on the use and conservation of natural gas.

Propose Texas Proration By Lease Allocations

Unusual interest in the next Texas proration hearing to be held in Austin September 17 has been indicated by operators. Of primary importance is the probable appearance of four railroad commissioners, despite the fact that the law provides for only three.

Beside Commissioners Thompson and Culberson, whose right to the office is unquestioned, Commissioners Sadler and Jester are expected to attend. On the following day in Dallas, the latter two commissioners will go into federal court where the right to office will be determined.

Of equal interest is the suggestion that hereafter allowables in Texas will be assigned to each lease instead of to each well. This plan has been suggested to the commission by operators and Chairman Thompson urged that it be gone into fully at the hearing. In a statement he said:

"It is hoped that at the statewide hearing next Thursday the oil operators will be prepared to discuss and give testimony upon the desirability of the commission's establishing lease allowables in its orders instead of per-well allowables where lease allowables are practicable.

"For example, it has been suggested that where a lease has 6 wells and the allowable is 20 barrels per well, that

the allowable be fixed for this lease at 120 barrels, to be produced from the wells on this lease. It has been suggested that this is actually the way it is done, particularly in the case of pumping wells where 5 or 6 wells would be connected to one power unit and these 5 or 6 wells all being produced into a common flow tank, that it is almost impossible for the operator to be able to be positive that each and every well produced exactly 20 barrels. Our present reports require him to make such a report under oath and it is perhaps too onerous.

"Anyhow, it will be of interest to hear it discussed. Certainly it would save a great deal of time and effort and much paper if the Commission should decide to put our orders out prescribing lease allowables instead of per-well allowables since there are only 19,000 producing leases in the state whereas there are over 100,000 producing wells.

"We have previously put out orders allowing producers in all fields where it has been requested to produce the oil from those wells having the most efficient gas-oil ratio or the least water production. For example, if one well belonging to an operator was producing oil with a gas-oil ratio requiring 10,000 cubic feet to lift each barrel of oil and another well whose gas-oil ratio showed only 400 cubic feet of gas required to be expended to lift a barrel of oil, then the commission has permitted that the allowable for the two wells be produced from the well with the most efficient gas-oil ratio.

"In the case above cited that the allowable was 20 barrels, the well with 10,000 cubic feet of gas required to lift each barrel of oil would consume 200,000 cubic feet of gas whereas the other well on the same lease that took only 400 cubic feet of gas to lift each barrel, would, to produce 20 barrels of oil, require only 8000 cubic feet of gas. Thus, if the 40 barrels allowable for the two wells were allowed to be produced from the low gas-oil ratio well only 16,000 cubic feet of gas would be required to produce the allowable for the two wells as against 208,000 cubic feet of gas that would be required to lift the oil from each separate well.

"This is true conservation and I am wondering if it could not be extended statewide. I am sure with the shortage of manpower that is confronting everyone and with the cost of production mounting and with the selling price of crude being pegged or fixed, that the operators of Texas would be interested in discussing and giving testimony on any plan that would simplify their operation and at the same time be in the interest of conservation."

War Effort Makes Safety Meet Important

"Save manpower for warpower" is the theme of the 31st National Safety Congress and Exposition, to be held in Chicago October 27-29, the National Safety Council has announced. The first wartime Congress since 1918 will be devoted completely, the Council said, to the safety job now at hand—to help win the war.

The program, covering every phase of safety, with 175 sessions and 500 program participants, will be centered on the problem of stopping accidents that delay victory by slowing production, impeding the movement of troops and supplies, and wasting manpower, material and time.

The Congress is the annual convention of the National Safety Council. It is the largest safety event in the world. Attendance averages 10,000, and safety leaders from all parts of the country assemble to exchange ideas, experiences and problems. Delegates this year will work overtime to cram the program into three days, instead of the usual five, and thus avoid week-end travel.

The 1942 Congress comes in the midst of a nation-wide war emergency safety campaign being conducted by the council at the direct request of President Roosevelt.

To provide the Council with sufficient funds to carry on the greatly expanded program, industrial and business leaders have formed the War Production Fund to Conserve Manpower, under the chairmanship of William A. Irvin, former president of United States Steel Corporation, and is seeking to obtain from industry and commerce the $5,000,000 needed to do the wartime safety job.

"We regard the 1942 Congress as the most important ever held," said Ned H. Dearborn, executive vice president of the council. "It will give safety leaders the country over their first opportunity since the war began to meet for a mass attack on accidents that are delaying victory.

"Many of these safety men will bring to the congress definite proof that accidents can be stopped in the factories and on the highways, despite the rush of war production. They will pass along their effective safety programs to others who have not been so successful. The result will be that those who attend the congress will go back to their jobs better prepared to stop wartime accidents.

"The slogan, 'Save manpower for warpower,' sums up the purpose of our campaign and of the congress.

"Safety has a wartime assignment that is just as specific as building tanks or producing food for the army. Our job is to stop accidents and save manpower. Right now, every accident casualty is a war casualty."

Headquarters for the congress will be the Hotel Sherman in Chicago, but sessions also will be held in the Morrison and LaSalle hotels.

An exhibit of all types of safety appliances and equipment will be a feature of the congress.

Enlarge Gas Line

Northern Natural Gas Company is to start immediately on the construction of 30 miles of 20-24-inch, main line loop in its northern Kansas section, with added compressors boosting compressor station facilities in the same area by about 3000 horsepower. Approval has been given the construction by the Federal Power Commission.

Texas Permits

Permits for drilling 40 wells in Texas were approved last week by the Railroad Commission, a decline of 13 as compared with the previous week.

Twenty-four locations were approved in Southwest Texas, 4 in the Gulf Coast, 3 in the East Texas area, 5 in North Texas and 4 in West Central Texas. No permits were granted in West Texas or the Panhandle.

Brazilian Exploration Using Six Rigs

The development program now being undertaken by the Brazilian government and conducted by Drilling & Exploration Company has already resulted in completion of 5 wells in the Salvador area capable of producing about 500 barrels per day of 47-gravity oil.

A home-made topping plant is now refining some of this crude and producing gasoline and other products used in the operations in this section. The wells have been completed around 1500 feet.

Five rigs are running at Salvador, 4 rotaries and 1 cable tool, the cable tool rig being some of the equipment originally purchased for government operations several years ago. Internal combustion power is being used.

Brazil during the past month had six rigs running. Two additional rigs will be added shortly.

In western Brazil, not far from the Peruvian border, a wildcat test is down below 1000 feet.

Planning Deep Test In Turner Valley Field

At an anticipated cost of $250,000, a deep test of the old central area of Turner Valley field in Alberta, famous for naphtha wet gas production years ago before the discovery of oil, is being considered by several companies operating in the valley.

Wells such as Royalite 4, which produced large quantities of naphtha in its time, secured production in Madison limestone at less than 4000 feet.

Contrasted with this is the considerable depth which must be penetrated to obtain oil from the Madison limestone in the north and southwest flanks. The usual production depth is in excess of 8000 feet. In the extreme north Major 12 recently was abandoned below 9000 feet, still in an upper formation.

The new test well would be drilled through the Madison limestone through the Banff shales and into the Devonian lime—a formation never penetrated in the history of the Turner Valley.

Houston API Chapter Gives Award to Rice Student

John Nesbett Leedom, senior electrical engineering student at The Rice Institute, Houston, was presented a $100 scholarship award by the Houston Chapter of the American Petroleum Institute, September 9. Leedom is on scholarship list at Rice, is member of Tau Beta Pi, honorary engineering fraternity, is active in various student affairs, and is president of the senior class.

The award winner was picked by Dr. Harry B. Weiser, dean of Rice Institute, and Bowman Thomas, chairman of the Houston Chapter. The following members of the scholarship committee set up plans for the presentation: I. W. Alcorn, Warren L. Baker, Charles Bedford, E. O. Buck, G. B. Corless, Rex Hamaker, E. V. Hewitt, Paul Hubbard, H. S. Lane, Byron Meredith, Gordon Richmond, J. U. Teague, C. E. Reistle, Jr., A. W. Baucum, W. S. Crake.

The Houston Chapter will give the award annually, and is the first time that any A. P. I. chapter has presented a scholarship to honor students.

Light and Heavy Fuel Oils Go Into Storage

Fairly satisfactory results were reflected in latest weekly statistics on the industry's operations and oil inventories.

Crude runs to stills were 41,000 barrels a day lower in the week ended September 5 than in the previous week, while crude oil production was temporarily subnormal. But in spite of reduced refinery input of crude, there were additions to stocks of both light- and heavy-fuel oils, as desired; while a half million barrel withdrawal of gasoline from storage appeared desirable in view of curtailed demand for that product and the contemplated national gasoline rationing.

Refinery runs averaged 3,656,000 barrels daily in the week of September 5, compared with 3,697,000 the previous week. The new rate was 395,000 barrels or approximately 10 percent under that of 4,051,000 barrels per day reported for the corresponding week last year.

Petroleum Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	[1]OPC Allocation Sept.	PRODUCTION IN WEEK ENDED Sept. 5	Sept. 12
Arkansas	81,900	71,100	72,300
California	791,500	712,600	747,300
Long Beach		35,200	35,100
Midway-Sunset		55,300	57,400
Kettleman Hills		35,700	41,400
Wilmington		94,500	94,600
Rest of State		491,900	518,800
Colorado	7,000	6,800	6,750
Illinois	289,200	268,800	274,850
Salem		41,800	40,200
Louden		44,650	48,100
Other New Pools		170,200	174,550
Old Pools		12,150	12,000
Indiana	19,300	16,900	18,250
Kansas	285,300	245,850	272,650
Kentucky	14,000	12,200	12,250
Louisiana	334,800	329,600	337,450
North Louisiana		97,550	96,900
South Louisiana		232,050	240,550
Michigan	66,700	61,900	61,950
Mississippi	50,200	72,350	73,250
Missouri		130	130
Montana	22,800	23,800	20,750
Nebraska	3,900	3,300	3,100
New Mexico	98,100	96,050	98,350
New York	15,200	13,200	13,300
Ohio	11,200	9,600	9,650
Oklahoma	415,300	379,300	375,250
Oklahoma City		74,700	61,600
Seminole Area		89,050	93,275
Rest of State		215,550	220,375
Pennsylvania	52,300	51,600	52,400
Tennessee		30	30
Texas	[2]1,397,800	1,209,050	1,357,850
Upper Gulf Coast		294,250	311,050
East Texas Field		290,850	362,700
Rest of Eastern Texas		79,850	86,050
Lower Gulf Coast		96,300	99,150
Southwest Texas		45,150	48,450
South Central Texas		17,050	17,950
West Texas		180,300	205,800
North Texas		130,350	136,850
Panhandle		74,950	89,850
Utah		15	15
West Virginia	16,600	10,000	9,700
Wyoming	93,400	91,550	94,600
Total United States	4,066,500	3,685,725	3,912,125

[1] Production rates recommended for states by Office of Petroleum Coordinator, on basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month. State conservation authorities except Texas Railroad Commission have prescribed allowables calculated to hold actual production within OPC regulations. (Details on state allowables published in The Oil Weekly of September 7, page 43.)

[2] In general, Texas fields will be shut down on September 5, 6, 12, 13, 19, 20, 26, 27 and 30, but the number varies in different fields.

Crude-oil production was reported by the American Petroleum Institute to have averaged 3,683,000 barrels daily in the week ended September 5, off 281,000 from the previous week and 132,000 under output in the like week last year.

Stocks Increase

Stocks of gas oil and distillate fuel were increased 759,000 barrels between August 29 and September 5, to a total of 42,819,000 barrels, and the latter amount was 3,308,000 barrels (7 percent) less than the 46,127,000 barrels in storage one year previously. Currently available statistics do not show the stocks of the petroleum products in the East Coast district, and it is not indicated how serious the scarcity of inventories in that area is, although it is certain that there will be difficulty in meeting demand during the fall and winter.

Stocks of residual-fuel oil in the United States totaled 78,267,000 barrels on September 5, having increased 233,000 barrels within a week, but that amount was 16,858,000 barrels (17.7 percent) less than the 95,125,000 barrels on hand September 6 last year. The heavy-fuel oils remain scarce in the East Coast district and also are growing more scarce on the West Coast, following steady withdrawals from storage throughout this year.

United States crude-oil stocks rose sharply from 246,307,000 barrels on August 22 to 249,007,000 barrels August 29, the Bureau of Mines reported.

Transportation Shortage Principal Market Factor

Oil industry markets throughout the country continue to be dominated by the transportation scarcity, which leaves the East Coast eager for supplies, while refiners of the Gulf Coast, Mid-Continent, and Middle West are blocked from meeting all potential demand by lack of tank cars or other transportation. In the supplying districts, the lack of transportation is causing the backing up of oils in storage, and in some cases tanks are full, with the result that plant owners have been forced to close down temporarily, pending the moving out of accumulated oils.

On the Atlantic seaboard, there is continued anxiety regarding inadequate supplies of heating oils, stocks being abnormally low, while receipts into the district are limited. Gasoline and other products likewise continue scarce in the region, despite the drastic rationing of available supplies.

The Gulf Coast refining district still is severely affected by the transportation shortage. Tank cars for shipping oils out of the area are difficult to obtain, and with tanker shipments down to extremely low volume, some refineries are unable to operate regularly, being obliged to shut down at different times until shipments clear out storage space.

Transportation shortage hampers refiners of the Middle West, who could ship more oils to the East if they had more cars. However, shipments are being made in large volume, and substan-

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

ITEM	Crude Oil Prod. Bbls. Day (Add 000)	Week Ended	Runs to Stills Bbls. Day (Add 000)	Week Ended	Crude Stocks Bbls. (Add 000)	Week Ended	Gasoline Stocks Bbls. (Add 000)	Week Ended	Gas Oil & Distillate Stocks Bbls. (Add 000)	Week Ended	Residual Fuel Oil Stocks Bbls. (Add 000)	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]107,229	3-14	49,357	1- 3	95,857	1- 3
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-21	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	80,870	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	244,364	1-10	80,356	9- 5	29,240	4-25	76,903	7- 4
Trends in 1942 (Week Ended):												
Jan. 3	4,038	.....	3,961	.....	244,440	.....	92,987	.....	49,357	.....	95,857	.....
Jan. 31	3,871	.....	3,848	.....	250,740	.....	97,810	.....	40,674	.....	91,189	.....
Feb. 28	4,016	.....	3,675	.....	259,373	.....	105,635	.....	34,547	.....	88,285	.....
Mar. 28	3,820	.....	3,667	.....	263,208	.....	105,624	.....	31,756	.....	83,045	.....
April 25	3,581	.....	3,506	.....	257,073	.....	102,897	.....	29,240	.....	81,107	.....
May 30	3,877	.....	3,522	.....	255,023	.....	95,355	.....	31,384	.....	79,628	.....
June 27	3,719	.....	3,581	.....	253,364	.....	88,396	.....	32,851	.....	77,304	.....
July 25	3,691	.....	3,658	.....	249,262	.....	82,281	.....	35,966	.....	77,816	.....
August 1	3,383	.....	3,672	.....	248,336	.....	81,324	.....	37,530	.....	78,383	.....
August 8	3,970	.....	3,561	.....	246,975	.....	81,277	.....	39,024	.....	78,575	.....
August 15	3,893	.....	3,711	.....	246,433	.....	80,708	.....	40,041	.....	77,422	.....
August 22	3,972	.....	3,723	.....	246,307	.....	80,443	.....	40,416	.....	78,007	.....
August 29	3,964	.....	3,697	.....	249,007	.....	80,831	.....	42,060	.....	78,034	.....
Sept. 5, 1942	**3,683**	.....	**3,656**	.....	.....	.....	**80,356**	.....	**42,819**	.....	**78,267**	.....
Sept. 6, 1941	3,815	.....	4,051	.....	[4]249,413	.....	81,571	.....	46,127	.....	95,125	.....
Change:												
In week	—281	.....	—41	.....	+2,700	.....	—475	.....	+759	.....	+233	.....
In year	—132	.....	—395	.....	—406	.....	—1,215	.....	—3,308	.....	—16,858	.....
In year	—3.4%	.....	—9.7%	.....	—0.2%	.....	—1.4%	.....	—7.1%	.....	—17.7%	.....

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, August 30, 1941.

tial portions of the oils moved are going into the East Coast district.

In the Mid-Continent, refiners complain of the difficulty of obtaining tank cars for meeting the demand from the East, but supplies are comparatively tight, with actual shipments of most products heavy, indicating that transportation really is fairly adequate for handling the oils that can be turned out.

Western Pennsylvania markets remain exceptionally strong, with materials generally scarce. Current production is short of potential sales, and very little of any product can be supplied from storage, following the long period of heavy demand.

Shell Develops Special Oil for Marine Turbines

A recent outgrowth of unusual war needs of the United States Navy has been the call for a radically new type of marine turbine oil which combines powerful rust preventive properties with superior oxidation stability. This new oil has been developed after several years of scientific research by Shell Oil Company, which is the exclusive supplier to the Navy with contracts totaling several million gallons. Meeting the Navy's latest stringent specifications, the new product helps insure safe operation under adverse conditions.

The new turbine oil, which will eventually be supplied to all United States battleships, cruisers, aircraft carriers and destroyers equipped with modern turbines, was subjected to severe service tests by Navy engineers.

The oil, in addition to being used by the Navy, is being used in many merchant marine ships and tankers along the coastline and in convoy service. A special refining technique and the unique combination of additives developed by Shell engineers enable the oil to stand up under the most extreme operating conditions.

The turbines run under a wide variety of loads, require an oil able to withstand terrific punishment resulting from the necessity of cruising slowly when convoying cargo vessels, then often speeding in hot pursuit of the enemy.

Lubricating oil in the turbines is whirled by pumps of high throughput to bearings, gears, and governor. Air is thus constantly beaten into the oil, and the oil is given no rest to dispel air and water. Due to its high circulating velocity, it is in intimate contact with metal surfaces, and under these grueling conditions the oil has to lubricate not only the heavily loaded main and thrust bearings but also the reduction gears running at terrific speeds and under heavy tooth pressures.

API Bulletin on Training Of Conference Leaders

Special training available for leaders of foremanship training conferences in the petroleum industry is described in an informational bulletin issued by the American Petroleum Institute's division of production.

Training of conference leaders is a part of the broad program of vocational training directed by state departments of trade and industrial education, with which the institute has been cooperating for many years in the development and validation of texts for petroleum-industry workers. Training of leaders, however, requires separate treatment, because these leaders in turn train supervisors and foremen in their own individual companies.

The new bulletin describes the facilities available in the various oil-producing states for training conference leaders, and explains procedures for forming classes. The special training, principles of conference leading, types of educational procedure, a code of ethics, conference devices, and the principles involved in chart work, are briefly outlined. An appendix gives a bibliography of reference books, and a list of the state departments of vocational training in the principal oil-producing states.

Copies of the pamphlet, Bulletin D-2-B, "Special Training Available for Leaders on Conduct of Foremanship Training Conferences," may be obtained without charge from the institute at New York, or from the Division of Production, 1205 Continental Building, Dallas, Texas.

North Turner Valley Well on Production

A large producer, Major 9, was completed in North Turner Valley in June and put on regular production. Initial rate was 1667 barrels per day from 8700 feet. No. 9, the only June completion in Turner Valley, is 2 miles southeast of Major 7, which recently tested 2306 barrels daily. Average initial daily production for the 41 producers completed in the valley last year was 722 barrels, the maximum being 1978 barrels.

Wells on regular production elsewhere in Alberta Province in June included Alberta Southern 1, Vermilion 9, Acme 2 and Vermilion 7, all in the Vermilion area and showing initial rates between 25 and 35 barrels per day, and Wainwright Development 1, with an initial of 8 barrels daily. Total Alberta production averaged 27,706 barrels per day, a drop of 576 barrels from May production.

In the July 27 issue of THE OIL WEEKLY (International Number), Page 104, was the statement that "Turner Valley oil is subject to a deduction in the volume as computed to 60° F. of .075 percent to take care of pipe line loss." Actually the deduction figure is 0.75 percent.

OPC Formula for Petroleum Prices

New methods for determining the maximum prices of new petroleum products not being produced when the oil-price schedule became effective last October and of old products when other provisions of the schedule neither except sales of such products nor determine a maximum price that would be applicable, were announced by OPA September 11. The schedule originally provided that under such conditions the seller might sell such a product at the market price prevailing at that point on October 1, 1941, but because of uncertainty as to what constituted the "market price" for any given point a more definite provision was needed.

The latest amendment accordingly, changes the provision to make the maximum price, under those conditions, the maximum price of the most closely competitive seller of the same class. In case even this method cannot be applied, the seller shall set a tentative maximum price and within 15 days must request formal approval of that price by OPA. In the future, it was said, a maximum price established by a seller for an oil product covered by Schedule 88 will be valid only if the seller can show either that the price was determined under an express pricing provision of the schedule or by the new tentative pricing procedure just established.

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U. S. Field Operations

Illinois Basin

New Dale Field Reports Several Completions

Eason Oil Co. testing Clay County wildcat. Gulf testing east outpost to Dale field. Several completions reported in St. Jacob field of Madison County.

Clay County: Eason Oil Co.'s Barbee 1, SW SW SE 35-5n-6e, 4 miles north of Louisville and 4 miles southwest of the Bible Grove field, swabbed 90 barrels of oil in 24 hours following perforation and a 1250-gallon acid treatment in McClosky at 2789-98 ft.

Two miles southeast of Xenia, Sinclair-Wyoming's Rose 1, SW NE NE 12-2n-5e, was abandoned at 3113 ft through the McClosky.

Hamilton County: Gulf Refining Co.'s Neal 1, NW NE NW 8-6s-7e, east of the Dale field, is testing Aux Vases sand at 3006-27 ft. Cameron Oil Co. had rotary derrick up for Hall-Biggerstaff Community 1, SW NW NW 5-6s-7e, north of the Gulf test.

Magnolia's Moore 1, NE NE 33-5s-5e, 6 miles southwest of McLeansboro and 3 miles northwest of the Rural Hill pool, was drilling below 3300 after failing to find saturation in Aux Vases at 3197 ft.

Madison County: Still one of the state's more active fields is the St. Jacob pool of Madison County, a comparative recent discovery. Completions there during the week, all in Trenton lime, included: E. A. Obering and M. D. Bryant's Hartman Community 1, SW SW SE 16-3n-6w, pumped 430 bbls after 3000 gallons of acid at 2305-26; Sohio's Noll 1, SW NE NW 21-3n-6w, 91 barrels of oil and 19 bbls of water; Ohio's Hartman 1, SW NW NE 21-3n-6w, 272 bbls of oil and 14 bbls of water 2372-2400 ft. Two miles southwest of production J. W. Menhall's Holtgrave 2, SW SW SE 19-3n-6w, was shut down for rig repairs at 1598 ft.

Operations Down: Successful completions in Illinois for the first 8 months of the year dropped 60 percent in comparison to the same period of 1941. Up to September 1 there had been 762 wells completed as against 1802 for the corresponding period a year ago. Drilling permits from January 1 to September 1 totaled 1562 as compared with 2949 in the first 8 months of 1941. Estimated yield of Illinois wells through August was 74,701,000 barrels while during the same 8 months of last year the total was 83,894,000. August production was 8,190,000 as compared with 8,506,000 in July.

Indiana

Two new operations are under way two miles southwest of Evansville, in Vanderburgh County. Sells Petroleum Co.'s McCarty 2, SW NE NW 32-6s-11w, set surface casing. McCarty 1, pool discovery well completed in February in the Waltersburg sand for an initial production of 200 bbls a day, is now reported making only 25 bbls of water.

George Nelson and United Oil Co.'s Stader 1, NW SE NW 32-6s-11w, also is setting drive pipe for a cable-tool test.

Posey County: Longhorn Oil Corp.'s Greathouse 2, SW NE NE 18-7s-14w, 7 miles west of Mt. Vernon, was drilling at 2909 ft. McClosky lime break at 2821-25 ft did not prove commercial; but Cypress sand at 2456-65 ft showed 160 ft of clean oil, 30 ft of oil-cut mud and 60 ft of drilling mud in 1 hour on drill-stem test. Operators have indicated they will set casing on Cypress.

Kentucky

Henderson County: Fram Bureau Oil Co.'s Eubank 1 (24-Q-21), prospective Cypress sand pool-opener 2½ miles northwest of Smith Mills, was swabbing about 10 bbls of oil an hour, with no water, from Cypress break at 2303-16 ft.

Union County: Sun Oil Co.'s Highland Creek 1, NE NE SE 20-P-19, set surface casing for new wildcat start.

Results on Industry's Prospecting Fronts

Completion of 63 wildcat tests reported during the week brings to 2198 such tests so far this year. The week's completions included 10 new production strikes, bringing to 281 the number of new oil fields uncovered during the year.

North Dakota: Wogansport wildcat is failure.

California: Stepping up drilling for fuel-oil crudes.

Texas Panhandle: Projected Ordovician test hits granite first.

West Texas: Dawson County wildcat hopeful.

North Texas: Five wildcats in Montague County have promising indications of production.

Southwest Texas: Two wildcats showing.

Texas Coast: New sand at Sour Lake.

ILLINOIS FIELD COMPLETIONS

Clinton County—Texas Co.'s Defend 1, sw se sw 35-3n-2w, Bethel 1187-1206 ft, 125 bbls, 1206 ft.

Texas Co.'s B. Grey Comm. 7, sw ne se 35-3n-2w, Bethel 1206-1220 ft, 65 bbls, 1222 ft.

Edwards County—C. J. Westlundt's J. B. Roosevelt 1, c sw sw 18-2s-14w, abnd 3175 ft.

Fayette County—H. Luttrell et al's J. Ford 2, se ne nw 31-5n-3e, Bethel 1893-1900 ft, 95 bbls, 1902 ft.

Franklin County—Sun's Old Ben 2, se ne ne 24-5s-1e, abnd 2779 ft.

H. H. Wegener's C.W.&F. Coal Co. 1-L, c s½ se sw 1-7s-2e, abnd 2114 ft.

E. S. Adkins' Orient Coal Co. B-4, c s½ se ne 12-7s-2e, AV 2706-20 ft, 15 bbls, 2975 ft.

Gallatin County—Magnolia's McGuire 2, ne nw sw 19-8s-10e, abnd 3010 ft.

Hamilton County—Shell-Pure's J. E. Rawls 3, nw sw nw 12-6s-6e, Bethel 2928-50 ft, 156 bbls, 3060 ft.

Texas Co.'s Smith Comm. 1, c w½ sw nw 35-6s-6e, AV 3102-15 ft, 189 bbls, 3115 ft.

Pure's Layman A-1, nw nw sw 17-6s-7e, Cyp sd 2717-40 ft, 214 bbls, 3065 ft.

Jasper County—Pure's Cunningham A-2, c nw sw 5-5n-10e, abnd 2855 ft.

Pure's Wartsbaugh 2, c se se 6-5n-10e, abnd 2905 ft.

Pure's Hall 2, c se ne 7-5n-10e, Rosi 2809-13 ft, McC 2830-44 ft, 15 bbls, 2855 ft.

C. R. Craft's Krause 1, c e½ nw se 6-5n-14w, McC 2855-2903 ft, 215 bbls, 2905 ft.

Jefferson County—E. M. Self's Jacob German 1, nw se se 16-2s-1e, abnd 2305 ft.

Jersey County—W. A. Waymire's Buck 1, ne nw sw 4-6n-13w, abnd 2817 ft.

Madison County—Sohio Prod. Co.'s L. M. Noll 1, sw ne nw 21-3n-6w, Trenton 2366-98 ft, 83 bbls, 2474 ft.

Marion County—R. J. McFarland's Baker Est. 1, se se se 8-1n-1e, abnd 1670 ft.

Richland County—Ray Phebus et al's C. Crews 4, c nw ne 19-4n-10w, Buchanan 1155-61 ft, 50,000 gas, 1161 ft.

Wayne County—Gulf's Blackburn - Thomas

U. S. Drilling Operations in Week Ended Sept. 12, 1942

STATE	ALL WELLS COMPLETED — THIS WEEK Total	Oil	Gas	Dry	*Miscel.	Total 1942	Total this Date 1941	WILDCATS COMPLETED† — THIS WEEK Total	Oil	Gas	Dry	Distillate	Total 1942
Alabama						3	1						3
Arizona						2							2
Arkansas	4	3		1		93	117						11
California	17	13		4		520	804	4			4		79
Colorado	1			1		9	14						
Georgia						2	1						2
Illinois	51	15	1	26	9	1,485	2,658	19	4		15		428
Indiana	8	5		2	1	277	387	2	2				69
Iowa						5							
Kansas	41	23	1	17		1,159	1,587	12			12		260
Kentucky	6		1	4	1	105	216	3		1	2		28
Louisiana	8	5		3		697	1,046						107
Michigan	13	7	2	4		486	568	4	1		3		125
Mississippi	1			1		83	138						27
Missouri						21	59						
Montana	1		1			143	144						
Nebraska						27	62						13
New Mexico	17	14		3		293	258						33
New York	29	16			13	874	669						1
Ohio	27	2	17	7	1	775	1,206						
Oklahoma	26	11	2	9	4	1,031	1,548	5		1	4		208
Pennsylvania	44	38	6			2,648	2,842						
Tennessee						8	16						
Texas	75	50	2	22	1	4,080	7,252	14	3		11		799
Utah							2						
Virginia						1							
West Virginia	17	3	10	2	2	524	479						
Wyoming	9	9				69	99						3
Total this week	395	214	43	106	32	15,415	22,178	63	10	2	51		2,198
Total last week	376	207	40	100	29	15,020	21,424	51	4		47		2,135
Total this year	15,415	8,115	1,295	4,026	1,979			2,198	281	34	1,877	6	

* Includes old wells deepened, water intake, gas input, salt water disposal, and distillate wells.
† OPC program calls for 4,000 wildcats in 1942, of which 624 should produce oil and 116 gas, leaving 3,260 dry.

3, c ne se 19-1s-7e, Rosiclare 3218-26 ft, 151 bbls, 3286 ft.

H. H. Winert's Clark 1, c e½ nw nw 12-2s-7e, abnd 3319 ft.

White County—S. C. Yingling's Eastwood 1, se sw ne 20-3s-14w, abnd 1946 ft.

OLD WELLS DEEPENED

Jasper County—Pure's Albert Spraul 1, c e½ se se 18-5n-10e, McC 2804-42 ft, otd 2526 ft, pb 2842 ft, 56 bbls, 2850 ft.

White County — Sinclair-Wyoming's Myers 1, sw sw sw 1-6s-9e, otd 2287 ft, abnd 3173 ft.

Superior's Fitton 4, c sw se 28-4s-14w, pay 2826-53 ft, otd 2822 ft, 50 bbls, 2842 ft.

Superior's Fitton A-16, nw sw sw 28-4s-14w, pay 2850-59 ft, otd 2854 ft, 65 bbls, 2859 ft.

Superior's Fitton 23, c n½ sw sw 28-4s-14w, pay 2725-30 ft, pay 2578-83 ft, otd 2732 ft, 75 bbls, 2783 ft.

Superior's Ford 4, nw nw ne 9-5s-14w, pay 2166-91 ft, otd 2170 ft, 70 bbls, 2191 ft.

Superior's Ford 5, c ne ne nw 9-5s-14w, otd 2179 ft, 62 bbls, 2181 ft.

Superior's Ford 7, c se nw ne 9-5s-14w, Walts 2169-84 ft, otd 2152 ft, 60 bbls, 2184 ft.

ILLINOIS WILDCAT COMPLETIONS

Clinton County: Failure—W. D. Shedden et al's Kleiboeker 1, se se sw 21-2n-1w, pb 1306 ft, abnd 1454 ft.

E. J. Ruwaldt's Twiss 1, ne sw ne 23-2n-5w, abnd 3044 ft.

M. L. Dorsey's Murphy 1, nw nw sw 16-3n-3w, abnd 984 ft.

Coles County: Failure—F. D. Walker et al's Sutton 1, c nw se 36-14n-7e, abnd 1945 ft.

W. L. Topf's Bosler 1, sw sw ne 26-14n-9e, abnd 1054 ft.

Edgar County: Failure—Don O. Russell's Whiteside 1, c sw nw 14-13n-14w, abnd 1228 ft.

Gallatin County: New Field—Aetna Oil et al's Foster 1, se se ne 10-8s-9e, AV 2816-46 ft, 12 bbls, 3060 ft.

Hamilton County: New Field—Texas Co.'s Minton 1, c e½ se ne 20-4s-7e, AV 3298-3302 ft, 123 bbls, 3531 ft.

Jefferson County: Failure—Roy R. Powers' Hayes 1, ne sw se 5-1s-3e, abnd 2555 ft.

Carter's Interstate Coal 1, c sw se 26-3s-1e, abnd 2936 ft.

Skelly's J.F.P. Co. 1, se se sw 29-3s-1e, abnd 2441 ft.

Madison County: Failure—F. H. Burdette et al's Frey 1, sw sw sw 22-3n-6w, abnd 2475 ft.

Marion County: Failure—Sinclair - Wyoming's Sinclair 1, ne se se 11-1n-4e, abnd 3074 ft.

Richland County: Failure — D. C. Stem's Deckard-Derler 1, 120 ft s of nw ne nw 20-5n-14w, abnd 2972 ft.

Washington County: Failure—J. H. Dorland's J. R. McClay 1, se ne nw 16-3s-4w, abnd 1371 ft.

Wayne County: Failure — Gulf & Lario O&G's A. Burroughs 1, se sw nw 2-1n-5e, abnd 3105 ft.

Wayne County: New Field—Shell Oil, Inc.'s N. Montgomery 1, c nw sw 14-1s-6e, AV 3054-69 & 3072-77 ft, 19 bbls, 3237 ft.

White County: Failure — White Eagle's Meade 1, ne ne se 23-5s-9e, abnd 3236 ft.

Williamson County: Failure—Shell's Madison B-1, sw sw se 13-8s-3e, abnd 3217 ft.

OLD WELL DEEPENED

Cumberland County: Failure—Daugherty et al's Travis 1, se se sw 21-9n-10e, otd 509 ft, abnd 1400 ft.

ILLINOIS WILDCAT STARTS

Clay County—Texas' Wright 1, nw ne se 3-5n-5e, dr.

Jefferson County—Gulf's Bradford 1, nw se sw 14-1s-4e, lcn.

H. H. Wegener's Grant Unit 1, l w½ nw se 35-2s-2e, dr.

Richland County—Pure's Coen 28, c sw ne 9-3n-9e, dr.

St. Clair County—L. L. Benoint's Hobrein 1, sw sw se 17-2n-7w, dr.

A. L. Williams' Pieper 1, sw nw nw 35-1s-6w, dr.

C. W. Young's Hotz 1, c s½ ne sw 29-3s-6w, dr.

INDIANA FIELD COMPLETIONS

Daviess County—Indilky Oil Co.'s White 3, c ne nw 28-2n-7w, AV 1153-58 ft, McC 1189-94 ft & 1307-20 ft, 45 bbls, 1325 ft.

Posey County—Central States Oil's Hermson 2, c n½ se nw 30-6s-12w, Mansfield 1073-99 ft, 30 bbls, 1099 ft.

Carter and Gulf's Gempler C-76 1, c sw se se 36-6s-14w, Mans 1280-1301 ft, 166 bbls, 1308 ft.

Sullivan County—Ohio's Riggs 1, c sw ne 3-8n-10w, abnd 2541 ft.

Vanderburg County—Illind Oil Co.'s Peoples Savings 1, c se ne 31-6s-11w, abnd 1802 ft.

INDIANA OLD WELL DEEPENED

Posey County—Central States' Schreiber 1, ne se se 25-6s-13w, otd 1655 ft, abnd 2039 ft.

INDIANA WILDCAT COMPLETIONS

Posey County: New Field—Carter and Gulf's Black C-76 1, c ne se 11-7s-14w, McC 2727-2850 ft, 90 bbls, 2919 ft.

Spencer County: New Field—J. C. Miller and Nick Shiarella's Locker 1, nw sw nw 34-7s-7w, McC 1652-54 ft, 120 bbls, 1674 ft.

INDIANA WILDCAT STARTS

Posey County—Longhorn Oil Corp.'s Greathouse 2, sw ne ne 18-7s-14w, lcn.

Spencer County—Spencer Dev. Corp.'s G. B. Abshire 1, ne ne nw 14-7s-7w, lcn.

KENTUCKY FIELD COMPLETIONS

Daviess County—J. C. Miller's Morgan 16, 12-N-29, repressuring well, 1257 ft.

Vickers & Batten's G. T. Cain 2, 8-O-33, abnd 531 ft.

Union County—Ohio Oil Co.'s Briscoe 4, 16-O-19, abnd 1420 ft.

KENTUCKY WILDCAT COMPLETIONS

Daviess County: Failure—J. C. Miller's Massie 2, 2-P-28, abnd 995 ft.

Daviess County: New Gas Field—H. C. Farmer et al's Martin Howard 1, 16-N-30, Cypress 1245-47 ft, 214,000 gas, 1265 ft.

McLean County: Failure—A. V. Smith et al's Geo. Bryant 1, 7-L-28, abnd 601 ft.

KENTUCKY WILDCAT STARTS

Union County—Lindas & Whatley's Willett 1, 15-O-20, lcn.

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Oklahoma

Stephens County Wildcat Opens Oil Production

New shallow pool in Southern Oklahoma. Guthrie well produces from Dolomite. Apache trend draws location.

Stephens County: A new shallow discovery has been marked at Gulf Oil Corp.'s Spears 1, SW SW SW 14-1s-5w, which is swabbing 33 barrels daily from sand at 1971 ft, with top of pay section at 1884 ft. Hole has plugged back from 2425 ft where it was dry. Location is only about two miles from Velma deep.

Logan County: After going into Arbuckle and back up the hole on successive tests from Arbuckle through the Wilcox sands, Sunray Oil Co.'s Welch 1, CNW SE 7-16-2w, flowed 29 bbls of oil per hour on test through 2½-inch tubing, shut in pressure being 1425 lbs. Production is from Simpson dolomite with casing ripped for two-pay section between 5600 and 5656-ft.

Comanche County: The Texas Co. has staked Thomas 1, NW NE SE 20-4n-10w, in the northeast corner of the county on the problematical trend from Apache, northwest in Caddo County. The fold bounding Apache on the northeast is known to continue some distance in a general southeasterly direction.

Carter County: Pure Oil Co.'s Fraser 1, SW NE SW 26-3s-1e, wildcat on prominent high near Ardmore, is drilling sand at 5473 ft and looking for additional saturation after failing to complete at 5418 ft where water drowned out a fair show.

Harmon County: Gulf Oil Corp.'s deep wildcat in Southwest Oklahoma, Chaffin 1, CSW SW 25-1n-25w, is nearing the 7,000-ft mark.

OKLAHOMA FIELD COMPLETIONS

Carter County: Tussy—Skelly's Tussy B-1, ne ne sw 5-1s-3w, Tussy 3154 ft, pb 3350 ft, perf liner on bottom, pump 5 bbls oil, 120 wtr, 3450 ft.

Creek County: Glenn — Sinclair - Prairie's Berryhill 39, c w½ sw nw 16-17n-12e, Glenn 1406 ft, repressure well, 1574 ft.

Kay County: Vernon—Dave Morgan's Schnee 1, se ne ne 20-29n-1e, Miss lime 3380 ft, pump 86 bbls, 3440 ft.

Kiowa County: Hobart—H. J. Sherman's Howard 2, se ne ne 20-7n-17w, black lime & shale 1385-1430 ft, abnd 1615 ft.

Logan County: Crescent—Gulf's Compion 4, c ne nw 27-17n-4w, Layton 4876 ft, shot 50 qts, flow 222 bbls, casing, 4937 ft.

Continental's Katchor 2, sw se nw 34-17n-4w, Layton 4916 ft, abnd 4990 ft.

Noble County: Otoe—Superior's Loula 1-B, c ne sw 16-22n-1e, Layton 3404 ft, pay 3419-3430 ft, shot 10 qts, pump 29 bbls, 3430 ft.

Noble County: N. Lucian—Sunray's Bentley 1, c nw nw 6-20n-2w, Marshall zone 5477-5485 ft, shot 38 qts, flow 60 bbls, tbg, 5527 ft.

Okfuskee County: N. Okemah — Keener's Parsons 1-B, sw ne ne 36-12n-9e, Gilcrease 3092 ft, shot 60 qts, pump 43 bbls, 3153 ft.

Okfuskee County: Unnamed — Atlantic's Blythe 1, c nw se 27-8n-3e, Hunton 4597 ft, pb 4810 ft, perf, 2500 gals acid, pump & flow 160 bbls, 4956 ft.

Osage County: Unnamed — M. J. Graham's Osage 1, 50 ft w of c s½ 1-22n-9e, abnd 755 ft.

Payne County: Cushing—L. B. Jackson's Bickell 1, c nw sw 2-18n-6e, Miss lime 3238 ft, 3276 ft.

Pottawatomie County: Hotulke—R. Olsen & Skelly's Billington 1, c sw se 13-9n-4e, Hunton 4161 ft, 3000 gals acid, pump 10 bbls oil, 16 wtr, 4170 ft.

Seminole County: Seminole City — Shell's Patterson 1, sw se se 12-9s-6e, Hunton 3998 ft, pb 4043 ft, perf, 5000 gals acid, flow 72 bbls, tbg, 4275 ft.

Seminole County: Sylvian—J. E. Hall's Lindsay 1, nw sw nw 11-10n-7e, Cromwell 3602 ft, flow 63 bbls, choke, 3622 ft.

Seminole County: South Dill—Hall & Brisco's Seran 1, sw se ne 22-11n-8e, Hunton, abnd 4198 ft.

Stephens County: Velma—Skelly's Selby 35, sw nw se 26-1s-5w, sand 1080-1100 ft, temp abnd 1300 ft.

Tulsa County: Unnamed—W. A. Schmidt's A. D. Dudgeon 1, ne se se 32-17n-14e, sand 1335 ft, 1 gas, 1425 ft.

OLD WELLS DEEPENED

Caddo County: Apache—Texas Co.'s Smith 4, ne nw nw 2-5n-12w, otd 3763 ft, flow 326 bbls 2 hrs, 3883 ft.

Garvin County: Pauls Valley—Pure's Teter 1, se sw nw 31-4n-1e, otd 3906 ft, 1st Bromide 3900 ft, 2nd Bromide 4025 ft, flow 451 bbls 4 hrs, 2,870,000 gas, 4044 ft.

Pure's Teter 5, se ne se 36-4n-1w, otd 4526 ft, Arb 5325 ft, pb 3964 ft, abnd 5533 ft.

OKLAHOMA WILDCAT COMPLETIONS

Creek County: Failure—Kennedy's Eaton 1, sw nw se 12-14n-10e, temp abnd 679 ft.

Osage County: Gas—Ohio's Osage 2, ne sw ne 32-22n-9e, Burgess 2199 ft, 8500 gas, 2220 ft.

Payne County: Failure—Berry & Co.'s Hoyt 1, se nw nw 9-19n-3e, Hogs 3050 ft, Ccb 3335 ft, Osw 3543-3745 ft, Prue 3765 ft, Verd 3805 ft, Skinner 3901 ft, pink lime 3933-45 ft, Bart 3955 ft, abnd in 2nd Wilcox.

Pottawatomie County: Failure—Stanolind's State 1, c nw sw 36-9n-2e, Paw 1950 ft, Belle City 3110 ft, Hogs 3555 ft, Cob 3880 ft, Osw 4490 ft, Base Penn & Hunton 4950 ft, Syl 5255 ft, Viola 5345 ft, Dense 5400 ft, Dolo 5435 ft, Dense 5565 ft, abnd 5670 ft.

Stanolind's Ratcliff 1, sw nw ne 10-10n-3e, Paw 1640 ft, Belle City 2920 ft, Hogs 3355 ft, Cob 3720 ft, Osw 4490 ft, Earls 4727 ft, Base Penn & Caney 5050 ft, Mayes 5125 ft, Wood 5255 ft, Hunton 5389 ft, Syl 5422 ft, Viola 5525 ft, Dense 5575 ft, Dolo 5596 ft, abnd 5742 ft.

Cleveland County: Failure—F. C. Hall et al's Ward 1, c sw nw 33-6n-1e, Paw lime 2820 ft, Endi sd 3000 ft, Tonk lime 3240 ft, Tonk sd 3350 ft, 2nd Tonk sd 3580 ft, Belle City 4270 ft, O.C. Ccb 4600 ft, Base Penn & Wood 5640 ft, Hunton 5660 ft, Syl 5905 ft, Viola 6025 ft, Trenton 6115 ft, Bromide dense 6387 ft, Dolo 6445 ft, ns, Viola 6304-40, abnd 6568 ft.

Kiowa County: Failure—Beckwith & Hall-

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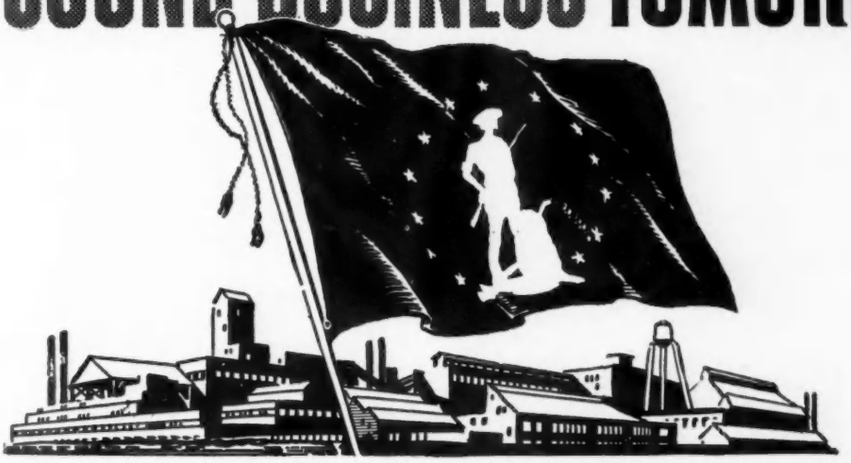

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ston's Hippa 3, sw sw nw 4-6n-16w, Hunton 634-59 ft, 31 bbls oil, 650 wtr, abnd 659 ft.

Logan County: Failure — Fain - Porter's Cessna 1, sw nw se 27-15n-3w, Deer Creek 3035 ft, lime 3250 ft, Avant 4423 ft, Perry 4575 ft, Osw 5700 ft, Base Penn & Wood 5964 ft, abnd 6401 ft.

Love County: Failure—W. F. Turner's Fee 1, c s½ s½ 12-7s-2w, abnd 7467 ft.

Pottawatomie County: New Field—Crosbie and Atlantic's Turner 1, ne nw sw 1-9n-4e, Belle City 1885 ft, Hoga 2370 ft, Calvin 3538-3660 ft, Earls 3850 ft, Mayes 4096 ft, Wood 4105 ft, Hunton 4232 ft, Syl 4254 ft, Viola 4340 ft, Dense 4385 ft, Dolo 4398 ft, 1st Wx 4430 ft, sw, 2nd Wx 4538 ft, pb 3905 ft, perf Earls, 68 bbls oil, 30 wtr, 4574 ft.

Seminole County: New Field—Shell's Patterson 1, sw se se 12-9n-6e, Booch 3439-53 ft, Gilc 3488-3510 ft, Caney 3528 ft, Mayes 3887 ft, Wood 3972 ft, Miss 3996 ft, Hunton 3998 ft, Syl 4101 ft, Viola 4190 ft, Dense 4226 ft, Wx 4262 ft, acid 1000 gals, 26 bbls oil 6 hrs, 4275 ft.

Stephens County: Failure—Sinclair-Prairie's Austin 1, nw sw sw 6-2n-9w, Pontotoc 1490 ft, Cisco 3340 ft, Gabro 4739-50 ft, abnd 4786 ft.

Tillman County: Failure—W. H. Little et al's Dickey et al 1, c nw nw 3-5s-15w, abnd 1951 ft.

OKLAHOMA WILDCAT STARTS

Garvin County—Sinclair Prairie's Reed 1, sw se ne 21-3n-3w, lcn.

Jackson County—Lloyd Noble's Gregory 1, c se nw 36-1s-24w, mim.

McIntosh County—Reese Drlg. Co.'s Rossiter 1-A, c sw se 17-11n-14e, dr 1935 ft.

Murray County—Rogers Bros.' Vanderslice 1, nw nw se 25-2n-2e, pb 1550 ft, so 1495-1523 ft, td 2600 ft, wom.

Noble County—Kubat et al's Tyer 1, ne ne sw 7-21n-6w, Miss 4024 ft, Wood 4210 ft, Miss 4231 ft, Syl 4208 ft, Viola 4236 ft, 1st Wx 4300 ft, 2nd Wx 4332 ft, pb 4090 ft, dst 4045-90 ft, 640 ft oily mud, to perf, 4356 ft.

Okfuskee County—Newton Barrett's Bean 1, ne ne ne 19-11n-9e, woc.

Mid-Continent's Reed 1, nw nw se 30-12n-7e, Belle City 1190 ft, Hogs 1530 ft, Checkerboard 1950 ft, Trace Osw 2880 ft, Prue 2895 ft, Skinner 3044-48 ft, sso, Bart 3130-3250 ft, dr 3672 ft.

Oklahoma County—Chillicotte et al's Chitwood 1, ne sw sw 6-13n-1w, dr 500 ft.

Pawnee County—Lastecas' Baker 1, ne sw se 9-20n-5e, dr 435 ft.

Payne County—Gardner Pet. Co.'s Lowe 1, ne ne ne 36-19n-1e, dr 3635 ft.

Pontotoc County—Blackwell O&G's Gilmore 1, nw se sw 4-3n-5e, dr 600 ft.

Pottawatomie County—Herndon Drlg.'s Jarvis 1, nw sw ne 6-8n-4e, Paw lime 1330 ft, Belle City 2275 ft, Hogs 2720 ft, Mayes 4330 ft, Wood 4415 ft, Hunton 4525 ft, Syl 4730 ft, Viola 4820 ft, Dense 4880 ft, Dolo 4905 ft, dr 4940 ft.

Cities Service's Goodin 1, c ne sw 23-8n-4e, ru.

Kansas

Henne Extended; Rice County Well Flowing

Henne field extended; flowing well indicates new field or extension west of Chase.

McPherson County: Westgate-Greenland Oil Co.'s Crowther 1, CSL NW NW 26-17-1w, 2½ mi south of Henne production, obtained partial fillup with fluid, 30 percent oil, from chat at 2778-2802 ft, with formation being tested through two series of perforations.

Rice County: Harwood Oil Co.'s Proffitt 1, NE NE NW 25-19-10w, proved for flowing production following acid in Arbuckle lime, at 3290 ft. On test after treatment well flowed 120 bbls in 30 minutes. It is either Chase extension or new field.

KANSAS FIELD COMPLETIONS

Barber County: Sun City—Great Lakes Carbon's Massey 2, nw se nw 35-30s-15w, Topeka 3025 ft, Lans 3879 ft, abnd 4346 ft.

Barton County: Kraft-Prusa—Sinclair Prairie's Prusa 4, c n½ sw se 20-16s-11w, Lansing 3000 ft, Sooy 3271 ft, Arb 3324 ft, filled 1000 ft wtr, pb 3248 ft, perf 3072-77 ft, 3583 ft.

Barton County: Stickney—Continental's Redetzke 2, se nw sw 20-16s-13w, Arb 3381 ft, 3000 bbls, 3396 ft.

R. Olsen & Anderson Pritchard's Stoskopf 1, se ne nw 20-16s-13w, Arb 3382 ft, pump 389 bbls, 3394 ft.

Barton County: Silica—C. E. Ash et al's Roth 2, c n½ se ne 25-19s-11w, Arb 3306 ft, pay 3321-28 ft, 1194 bbls, 3328 ft.

Butler County: Eldorado—Cities Service's Manning 16, c sw sw 5-26s-5e, Lans 1698 ft, Kansas City 1980 ft, Arb 2436 ft, 100 gals acid, pump 5 bbls oil, 45 wtr 18 hrs, 2477 ft.

Cowley County: Deichman—Arthur Brewer's H. A. Miller 1, se sw sw 13-31s-4e, Miss 2932 ft, abnd 2962 ft.

Ellis County: Bemis — Champlin's Hadley K-2, c e½ ne nw 29-11s-17w, Arb 3508 ft, 5000 gals acid, pump 40 bbls, 3517 ft.

Ellis County: Marshall—Aylward's Meis 5, c n½ sw nw 6-12s-17w, Lans 3405 ft, Arb 3681 ft, swab 14 bbls, 3687 ft.

Grant County: Hugoton Gas Area—United Prod.'s Lighty 2, c 14-30s-35w, Ft. Riley 2510 ft, 8000 gals acid, 7,496,000 gas, 2700 ft.

McPherson County: Lindsborg—Dickey Oil Co.'s Johnson 1, c w½ se nw 19-17s-3w, Viola 3363 ft, 2000 gals acid, shot 5 qts, pump 150 bbls, 3370 ft.

Pawnee County: Pawnee Rock—Stanolind and Elbar's Clemson 1, c s½ sw ne 12-20s-16w, Arb 3738 ft, perf 3803 ft, abnd 3804 ft.

Phillips County: Dayton—Carter's Eltiste 4, c sw ne 35-2s-19w, Lans 3155 ft, pb 3304 ft, rip csg 3152-3260 ft, 7500 gals acid, pump 63 bbls oil 20% wtr, 3350 ft.

Carter's Grote 2, c nw nw 1-3s-19w, Lans 3165 ft, pb 3300 ft, rip csg 3168-3297 ft, 6000 gals acid, pump 219 bbls oil, 24 wtr, 3365 ft.

Carter's Grote 1, c ne ne 2-3s-19w, Lans 3114 ft, pb 3175 ft, drilled to 3182 ft, rip csg 3114-69 ft, 4000 gals acid, pump 66 bbls, 3304 ft.

Carter's August Eltiste 1, c ne ne 11-3s-19w, Lans 3118, rip csg 3118-3296 ft, 5000 gals acid, pump 50 bbls, 3308 ft.

Phillips County: Ray — Cities Service's Nichol 4, sw ne sw 33-5s-20w, Reagan 3552 ft, perf 3620 ft, pump 194 bbls, 3620 ft.

Reno County: Schweizer — Transwestern's Ramsey 3, sw ne sw 36-22s-10w, Viola 3684 ft, pump 200 bbls, 3718 ft.

Reno County: Hendrickson — Stanolind's Peterson 2, se sw nw 2-23s-10w, c & p, abnd.

Reno County: N. E. Peace Creek—Barnsdall's Blasdell 1, sw nw nw 13-23s-10w, Viola 3749 ft, 700 gals acid, swab 22 bbls fluid 20% wtr, 3760 ft.

Cities Service's Estey 4, c se nw 14-23s-10w, Viola 3755 ft, 500 gals acid, flow 142 bbls oil 10 hrs by heads, 3767 ft.

Rice County: Chase—Semi-wildcat—Cities Service's McGlyn 1, c sw se 17-20s-9w, Arb 3310 ft, pump 451 bbls, 3318 ft.

Russell County: Gastason—Stanolind's Kastrup 1, ne ne se 15-15s-12w, Lans 2876 ft, Arb 3193 ft, pb 3175 ft, perf 2956-66 ft, 500 gals acid, swab and flow 147 bbls oil 10 hrs, pump 95 bbls oil 3½ hrs, 3210 ft.

Russell County: Trapp—Isern Bros.' Meharg 2, c n½ nw se 16-15s-13w, Arb 3325 ft, 2500 gals acid, 791 bbls, 3329 ft.

Champlin's Tittle B-2, c n½ se sw 14-15s-14w, Arb 3359 ft, swab 75 bbls oil 1 hr, 1000 gals acid, 3000 bbls, 3368 ft.

Derby's Deitz A-1, c s½ nw nw 22-15s-14w, Arb 3310 ft, swab 21 bbls oil 3 hrs, 3316 ft.

Phil-Han's Ochs 2, c s½ ne ne 22-15s-14w, Arb 3277 ft, 1000 gals acid, 1539 bbls, 3283 ft.

Cities Service's Resner 3, c se sw 23-15s-14w, Arb 3325 ft, 1000 gals acid, pump 345 bbls, 3330 ft.

Stafford County: Shaffer—Texon's Schaffer 2, nw se sw 3-21s-13w, Arb 3537 ft, abnd 3568 ft.

KANSAS OLD WELL DEEPENED

Russell County: Fairport—C. E. Liggett's Stewart 1, ne se se 17-11s-15w, otd 3228 ft, Conglomerate 3332 ft, 3376 ft.

KANSAS WILDCAT COMPLETIONS

Barton County: Failure—Continental's Sallee 1, se ne nw 13-20s-13w, elev 1854 ft, Topeka 2807 ft, Lans 3202 ft, Arb 3522-49 ft, abnd 3549 ft.

Ellis County: Failure—Lario, Falcon-Seaboard's Neilson 1, c w½ nw nw 28-11s-16w, Anhy 937 ft, Lans 2991 ft, Base K. C. 3265 ft, Arb 3353-70 ft, abnd 3370 ft.

Greenwood County: Failure — National's Wolf 1, sw sw ne 4-27s-3e, Lans 1955 ft, K. C. 2328 ft, hfw 2390-2400 ft, Base K. C. 2500 ft, Ft. Scott 2640 ft, Miss 2780 ft, hfw 2840 ft, B. Miss 2940 ft, Simp S. 3102 ft, Arb 3195 ft, hfw 3215-20 ft, abnd 3220 ft.

Harvey County: Failure—Atlantic et al's Williams 1, se se se 30-24s-2w, Topeka 1835 ft, Lans 2535 ft, reworked Miss 3311-20 ft, Miss 3365 ft, Base Miss 3795 ft, Hunton 3837 ft, Viola 3915 ft, Misener 3897 ft, Simpson 3940 ft, Arb 4033 ft, abnd 4091 ft.

Morris County: Failure — Frank Bros.' Crockers 1, se nw nw 7-15s-7e, temp abnd 2700 ft.

Rice County: Failure—Lauck & Moncrief's Monroe 1, c n½ ne sw 4-18s-9w, Lansing 2886 ft, Congl 3201 ft, Arb 3255-75 ft, abnd 3275 ft.

Rooks County: Failure — Black-Marshall's Federal Land Bank 1, c n½ sw nw, Anhy 1760 ft, Lans 3395 ft, Ft. Riley 2350 ft, Neva 2680 ft, Topeka 3165 ft, congl sand 3599 ft, granite 3640 ft, abnd 3641 ft.

Stafford County: Failure — Helmerich & Payne and Phillips' O'Brian 1, sw sw sw, Lans 3513 ft, sso 3589-93 ft & 3606-12 ft, congl 3942 ft, Miss 3955 ft, Kinder 4045 ft, Cherty Viola 4144 ft, Simp 4242 ft, Arb 4312 ft, abnd 4367 ft.

Ellsworth County: Failure—Cities Service's Fuller 1, sw nw ne 25-17s-8w, Topeka 2410 ft, Lans 2778 ft, Viola 3249 ft, Simp 3296 ft, Arb 3354 ft, abnd 3384 ft.

Marion County: Failure — R. Mendenhall's Holub 1, se se sw 28-18s-4e, Lans 1854 ft, abnd 1895 ft.

Reno County: Failure—Fain Drlg.'s Beauchamp 1, sw sw ne 22-24s-9w, Topeka 2737 ft, Lans 3256 ft, B. Kansas City 3640 ft, Miss 3652 ft, Kinder 3803 ft, Viola 4023 ft, Simp 4108 ft, Arb 4170 ft, abnd 4210 ft.

Russell County: Failure — N. Appleman's Worley 1, c w½ se ne 4-11s-15w, Anhy 937 ft, Lans 2982 ft, Cong 3323 ft, abnd 3370 ft.

Stafford County: Failure—W. P. Faulkner et al's G. Hufford 1, c e½ nw nw 33-21s-13w, abnd.

KANSAS WILDCAT STARTS

McPherson County — Westgate-Greenland's Lilly 1, c s½ sw se 30-17s-1w, lcn.

Pawnee County—Cities Service's Peters B-1, ne ne sw 29-20s-18w, lcn.

Reno County—Bay Pet. and Texon et al's Keddie 1, sw ne ne 25-23s-10w, sur.

Helmerich & Payne's Tonn 1, c nw se 29-25s-5w, lcn.

Rush County—J. J. Lynn's Lyman 1, c w½ sw ne 32-18s-18w, dr 40 ft.

Leavenworth County—Roxan's O'Keefe 1, c nw sw 20-11s-22e, dr 180 ft.

McPherson County — Westgate-Greenland's Lilly 1, c s½ sw se 30-17s-1w, lcn.

Westgate-Greenland's Messinger 1, c s½ sw ne 5-18s-1w, lcn.

Cities Service's Goering 1, ne nw se 31-18s-1w, lcn.

Pawnee County—Herndon's Harter 1, nw sw sw 15-21s-18w, Anhy 1160 ft, woc 1162 ft.

Rice County—Skelly et al's A. W. Shonyo 1, nw ne ne 10-18s-10w, lcn.

Ingling & Parker's Evans 1, sw nw sw 34-20s-8w, lcn.

Rooks County—Cities Service's Baumgartner 1, ne ne ne 25-8s-19w, woc 232 ft.

Russell County—Texas Co.'s Borrell 3, c s½ se se 32-14-12, dr.

New Mexico

Two Lea County Tests Will Get Acid Treatment

Two prospective discoveries in Lea County to rely upon acid treatment for commercial production. Protection string run for county's first sub-Permian test.

Wildcats: Ohio Oil Co.'s State-McCormick 1, C NE NE 39-9s-37e, 21 miles west by south of Deal pool Cochran County, Texas, nearest producing area, yielded nominal amount of free oil when swabbed down with sufficient gas to build up 50 pounds casing pressure. Production from broken saturation at 4960-5000 ft in San Andres topped at 4220 ft, elevation 3956 ft, being 27 ft high to failure situated 4½ miles southwest. Acid treatment was under way late last week.

Geo. P. Livermore and DeKalb Agricultural Association's State-Maxwell 1, 8 miles northwest of Lovington and 10 miles northeast of production, bailed dry at 5257 ft, with 7-in at 5200 ft, after logging broken oil stain and porosity below 5231 ft, estimated 90 ft above water level established by failure about 3 miles southeast. Owners plan to deepen and test by stages, then if it failed to produce in San Andres will fulfill 6500-ft depth contract.

Olsen Oil Co. and Atlantic's Langlie 1, east of Langlie field, cemented protection string at 3478 ft and is scheduled to drill to the Ordovician.

NEW MEXICO FIELD COMPLETIONS

Eddy County—Barney Cockburn et al's Etz 1, c se se 26-16s-30e, jkd 580 ft.

B. Cockburn et al's Etz 8, c se nw 35-16s-30e, flow 210 bbls 2-in, shot 150 qts, 2934-3024 ft.

B. Cockburn et al's Etz 13, c se ne 35-16s-30e, jkd 2450 ft.

B. Cockburn et al's Etz 14, c nw nw 35-16s-30e, flow 288 bbls, 2-in, shot 180 qts 2925-3020 ft.

B. Cockburn et al's State-Leonard 1, c se se 32-16s-30e, flow 352 bbls, 2-in, shot 220 qts 2778-2885 ft.

B. Cockburn et al's State-Tidal 4, c nw nw 2-17s-30e, flow 475 bbls, 2-in, shot 260 qts 2933-3038 ft.

B. Cockburn et al's State-Tidal 7, c nw se

36-16s-30e, flow 186 bbls, cas, shot 160 qts 2927-3107 ft.

Sanders Bros. et al's Etz 3-E, c nw ne 34-16s-30e, flow 80 bbls, 2-in, natural, 2892-2965 ft.

Sanders Bros. et al's Etz 4-E, c ne ne 34-16s-30e, flow 200 bbls, 2-in, natural, 2985-3007 ft.

Sanders Bros. et al's Evans 6, c se sw 33-16s-30e, flow 95 bbls, 2-in, natural, 2850-2931 ft.

Sanders Bros. et al's Evans 8, c nw sw 33-16s-30e, flow 150 bbls, 2-in, shot 200 qts 2800-81 ft.

Sanders Bros. et al's Leonard-State 8, c nw nw 34-16s-30e, flow 50 bbls, 2-in, shot 200 qts 2915-67 ft.

Neil H. Wills et al's State 2, c se sw 17-20s-30e, pump 120 bbls, plus 78 percent water, natural, 1457-84 ft, td 1520 ft.

Lea County: Arrowhead—Humble's State 3-G, c ne se 26-21s-36e, elev 3553 ft, salt series 1450-2690 ft, abnd 3960 ft.

Lea County: Maljamar—Johnny Cockburn et al's Miller 4-B, c se nw 25-17s-32e, flow 840 bbls, 2-in, shot 200 qts 4100-4200 ft.

Lea County: Monument—B. H. Nolen et al's Laughlin-Humble 2, c ne se 4-20s-37e, flow 264 bbls, 11/64-in, acid 4500 gals 3852-96 ft.

Lea County: Vacuum — The Texas Co.'s State 1-A-E, c nw nw 12-18s-34e, elev 4001 ft, pump 16 bbls oil, 5 water, shot 850 qts, pay 4693-5194 ft.

NEW MEXICO WILDCAT LOCATION

Lea County—J. C. Davidson-J. C. Clower's State-Shell 1, c ne ne 20-21s-34e, cem sur pipe.

Texas Panhandle

Ordovician Project Stops When It Hits Granite

Ordovician project in northwest portion of Texas Panhandle entered granite while short of objective, leaving one active deep test in district. Wildcat scheduled for Hemphill County.

Deep Tests: Pure's Federal Land Bank 1, 16 miles east Texline, failed to reach Ordovician goal due to granite at 6860-62 ft, and will abandon. No shows in granite wash section at 4500-5300 ft, elevation 4335 ft. In southwest corner Carson County, Stanolind's Griffin 1, scheduled Ordovician project on 22,500-ac block, drilling 3250 ft.

Wildcat: G. C. Jenson et al have scheduled a 6500-ft test on Hoover ranch, H&TC 52, Blk 41, near center of Hemphill County, and on 42,000-ac block. Location is about 2½ miles south by east of H. E. Hoover's Fee 1, J. S. Hood Survey, abandoned at 5368 ft after logging nominal shows of oil and gas at 5100-5200-ft levels.

TEXAS PANHANDLE FIELD COMPLETIONS

Carson County—Skelly's Schafer 153, I&GN 196, blk 3, pump 478 bbls, shot 380 qts 3122-92 ft.

Gray County—Cree & Hoover's Bell 1, ne nw sw I&GN 111, blk 3, pump 89 bbls, natural, lime 3107-88 ft.

Wilcox O&G Co.'s Combs-Worley 40, I&GN 61, blk 3, pump 58 bbls, granite wash 2977-2980 ft, td 3087 ft.

Hutchinson County—Continental's Sanford 5-D, H&TC 77, blk 46, pump 62 bbls, lime 2831-58 ft, td 2861 ft.

Shell's Healer 1-A, sw sw ne HE&WT-E.L. Ry. 71, blk Z, pump 141 bbls, shot 140 qts 3019-69 ft.

West Texas

Dawson County Wildcat Has Normal Oil Indications

Dawson County wildcat attracting interest. Intermediate test for Andrews County pools structurally low, and deep wildcat has fishing job. Pecos County records Ordovician failure.

Dawson County: Ray A. Albaugh et al's Higginbotham 1, 8 miles northeast of production and near center of north line of county, logged first soft lime in San Andres at 4839 ft, elevation 3046 ft, and showed nominal oil stain and odor in coring at 4860 ft.

Andrews County: Mid-Continent's University-South 1, wildcat between south extension of West Fuhrman and West Andrews pools, confirmed presence of syncline in intermediate area in topping solid lime at 4245 ft, and was drilling dry lime at 4520 ft. Atlantic-Wiggins and Hyde's University-Texu 1-A, 9 miles northwest of West Andrews pool, was fishing drill pipe at 9626 ft, with top of Upper Ordovician tentatively placed at 9550 ft. Fullerton Oil Co.'s Wilson 1-B, south offset to only pumper in Fullerton pool, flowed 8 bbls of oil hourly after acidizing lower Clear Fork pay at 7140-7220 ft, and is pulling tubing packer to include upper and more productive lime for completion.

Pecos County: M. D. Bryant et al's McDonald 1, first deep test for the depleted Rowan-Tong shallow pool and 4 miles southeast of the Ellenburger producer in the Wentz pool, tested dry in Ellenburger at 5250-5443 ft, but may deepen to water. Top of Ellenburger is 1139 ft low. Magnolia's Robertson 1, 13 miles north by west of Fort Stockton, is making drill-stem test in sandy-lime 6445 ft, possibly in Ordovician.

Wildcat Projects: Anderson-Prichard Oil Corp. is negotiating for a regular lime test in eastern Glasscock County on T. P. Land Trust acreage, centering around T&P 9, blk 32, T-4-S. Large lease owners in area have promised to support. In northeastern Gaines County, C. W. Crockett et al are attempting to finance a 7500-ft Clear Fork test on Riley ranch, D&W 35, Blk H, being 2 miles west of non-commercial outpost producer for Cedar Lake field.

WEST TEXAS FIELD COMPLETIONS

Andrews County: West Andrews—Phillips' University-Andrews 16, c ne ne sec 14, blk 11, pump 99 bbls, plus 9 percent water, acid 1500 gals 4224-4425 ft.

Andrews County: Fullerton—Fullerton Oil Co.'s Wilson 5, c se se PSL 15, blk A-32, elev 3369 ft, flow 929 bbls 43-gr, ratio 445/1, 1-in, acidized 26,000 gals Clear Fork 6800-7275 ft.

Fullerton Oil Co.'s Wilson 1-A, c nw ne PSL 16, blk A-32, elev 3371 ft, flow 974 bbls 42½-gr, ratio 525/1, 1-in, acidized 22,000 gals Clear Fork 6742-7250 ft.

Cochran County: Slaughter—Stanolind et al's Dean 2-A, 660 ft out nwc lab 25, leag 92, Lipscomb CSL, pump 204 bbls, acid 10,500 gals 4985-5015 ft.

Crane County: Gulf-Waddell—Gulf's Henderson 32, ne sw sw PSL 3, blk 23, flow 5917 bbls, ratio 297/1, open, acid 5000 gals 3516 ft.

Crockett County: Soma-Noelke—Bolsa Chica Oil Co.'s Bouscaren 2-29, 530 ft from s and 670 ft from w lines HE&WT 29, blk GG, elev 2543 ft, 150,000,000 gas open, natural, Yates 1171-1212 ft.

Fisher County: McCaulley—F. A. Stevenson et al's A. Bridges 1, c nw ne HT&B 51, blk 1, elev 1953 ft, pump 51 bbls, acid 4250 gals, perforations 2977-88 ft, td 3283 ft.

Gaines County: Wasson — Continental's Langdon 5-43, c se nw PSL 43, blk AX, flow 1054 bbls, 2-in, acid 12,000 gals 4936-5000 ft.

Honolulu's Brown 1, c sw sw PSL 39, blk AX, flow 651 bbls, ⅛-in, acid 10,000 gals, 4890-5006 ft.

Garza County: Post—M. L. Richards et al's Post 1, c ne se sec 6, blk 5, K. Aycock sur, elev 2541 ft, pump 101 bbls oil, 30 water, shot 440 qts 2810-2924 ft.

Pecos County: Apco—Anderson-Prichard's Boren 4, 658 ft from n and 660 ft from e lines lse, sec 4, blk 605, L. Merchant sur, flow 248 bbls 3/16-in natural, Ellenburger 4714-62 ft, td 4780 ft.

Upton County: McCamey—T.P. Coal & Oil Co.'s Lane 51-A, se sw ne GC&SF 5, pump 221 bbls, acid 2000 gals 2023-84 ft.

Ward County—Sam Weiner et al's (was Navarro) Sealy 2, se ne nw, G&MMB&A 47, blk F, elev 2723 ft, abnd 3032 ft.

Winkler County: Henderson—Atlantic &

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Yoakum County: Wasson—T.P. Coal & Oil Co.'s Bennett 36, se ne nw sec 631, flow 590 bbls, 2-in, acid 10,000 gals 5200-64 ft.

WEST TEXAS WILDCAT COMPLETIONS

Coke County: Failure—Fain-McGaha Oil Corp.'s Nicholas 1, c nw se H&TC 337, blk 1-A, elev 2065 ft, abnd 3830 ft.

Crane County: Failure—The Texas Co.'s T.P. Land Trust-Frasier 1, c nw ne T&P 19, blk 42, T-4-8, elev 2911 ft, anhydrite 1750 ft, Yates 3010-99 ft, Grayburg lime 4570 ft, solid lime 4615 ft, abnd 6209 ft.

Crane County: Oil Discovery—Magnolia's Glenn 1, 660 ft from ne and se lines H&TC 20, blk 1, 2⅛ miles ne Abell; 2½ miles se Conoco-Jones pool, elev 2426 ft, top Simpson 5500 ft, Tulip Creek 5845 ft, McKee sand 6125 ft, flow 226 bbls 43.2-gr, 615/1 gas, ¼-in, natural, sand 6137-86 ft.

West Central Texas

Taylor County Discovery Given Two Offset Locations

Prolific Taylor County discovery given two offsets. Runnels County prospect passes up oil zone account water. Jones County semi-wildcat showing for producer.

Taylor County: Butler-Horne Drilling Co.-Geochemical Surveys' Reddin 1, discovery between the Wimberly and Merkel pools, flowed 80 bbls 39.6-gr oil natural per hour through open tubing, then averaged 30 bbls hourly, 20/64-in choke, on official gauge. Production is from Flippen lime at 2248-51 ft, elevation 1774 ft. Base of Saddle Creek was at 2214 ft, 21 ft high to partnership's Hudson 1, southeast offset failure that found water in Flippen, but logged 4 nominal oil shows below in Lower Hope and Breckenridge. Owners have 1400-acre block, and have started west and south offsets to producer, which will be given pipe-line connection by Onyx Refining Co. from Wimberly pool, 1½ miles northeast.

Runnels County: Pawnee Royalty Co.'s Davis 1, 6½ miles northwest of McMillan pool, nearest production, failed to exclude water for a decisive test of oil-saturated sandy-lime at 2454-64 ft, and has resumed drilling with tools on 4500-ft depth contract.

Jones County: Cardinal Oil Co.-John Byram's Williams 1, ½-mile northeast of a south extension pumper in South Noodle pool, bailed 1 bbls oil hourly from sand 3080-82 ft, and will run 5½-in for completion. Thos. Humphrey's Boyd 1, wildcat, abandoned at 1502 ft.

WEST CENTRAL TEXAS FIELD COMPLETIONS

Jones County—Butler-Horne Dr. Co. et al's Fikes 2, 330 ft out NEc w½ s½ blk 105, DeWitt CSL sur, leag 126, elev 1750 ft, abnd 2440 ft.

Shackelford County — Hickok P&D Co.-Harry Reynolds' Nail 7-C, ET 133, abnd 1745 ft.

WEST CENTRAL TEXAS WILDCAT COMPLETIONS

Taylor County: Oil Discovery — Butler-Horne Dr. Co.-Geochemical Survey's Reddin 1, 780 ft from w and 330 ft from s lines T&P 25, blk 17, 1½ mi sw Wimberly pool, elev 1774 ft, base Saddle Creek 2214 ft, flow 720 bbls, 39.6-gr, 20/64-in, natural, Flippen lime 2248-51 ft.

Taylor County: Failure—B. & W. Oil Co.'s Guitar 1, c se nw BAL sec 59, elev 1757 ft, abnd 3468 ft.

WEST CENTRAL TEXAS WILDCAT STARTS

Callahan County — Anderson-Prichard Oil Corp.'s Sealy-Smith 1, 990 ft out NEc nw GH&H 121, blk 2, lcn 4500 ft.

Coleman County—Cornelius Kroll et al's R. W. Starnes 1, 2350 ft from n and 2850 ft from w lines GH&H 2, blk 1, lcn 1800-ft test.

Taylor County—Drl. & Exploration Co., Inc.'s Freeman 1, c ne se T&P 7, blk 18, 2½ mi sw Merkel, rog for 3100-ft test.

North Texas

Montague County Has Five Projects Indicating Success

Montague County has 5 active wildcats that have indicated possible production. Sinclair Prairie starting 5 more deep tests, making total of 9 for company in Montague County. Confirmation well for Young County pool.

Montague County: R. C. Lipscomb et al's Vaughn-Harmon 1, 2¼ miles northwest Illinois Bend and near Oklahoma border, is due to run pipe and try for an oil completion in Strawn shows after exploring Ellenburger, logged at 4592-4605 ft, 329 ft high to failure situated ⅝-mile to south. Tester used at 3862-74 ft recovered 430 ft 29.6-gr oil and 220 ft salt water, while small amount of free oil was returned when previous test made at 3440-60 ft.

Sinclair Prairie's Eanes 1, which recovered sufficient oil and gas to indicate a Bend strike without water when tester was used 3 times between 5816 and 5952 ft, was drilling shale 6105 ft to explore Ordovician before running pipe. Company's Henderson 2, twin to a 6935-ft junked wildcat, Denver prospect, plugged back from 7766 ft and tested water from open hole at 7143-95 ft, and will perforate at 6317-40 ft, with best production possibilities in Marble Falls at 6075-87 ft. In Forestburg four-well pool, Sinclair Prairie is starting operations on Jones 5 and 6 and second test on Steadham tract, and one test each in its Clingingsmith and Sanders pools.

Continental's Ketchum 1, 2 miles east of Bowie, was drilling shale at 6420 ft, having recovered a small amount oil- and gas-cut mud in making drill-stem tests between 6159 and 6212 ft in Bend, topped at 6084 ft. Company's Hildreth 1, 1¾ miles northeast of Gant-Turner pool, passed up rated output of 50 bbls of oil daily from Simpson at 7100-7201 ft, and developed a fishing job in deepening to 7256 ft. Continental's Richardson 1, southeast offset to its Mueller pool discovery, was drilling plugs from 7-in at 7174 ft, 2 ft off bottom, with Simpson pay due within 50 to 60 ft.

Young County: Shell's Bullock 1-D, ¼ mile southeast its Bullock pool discovery, flowed 179 bbls natural on 4-hr open-tubing gauge, Mississippi 4722-99 ft, topped pay section 4718 ft, 27 ft high. Standard of Texas and Hanlon-Buchanan's Daws 1, wildcat, is installing pump with small producer indicated after acidizing Bend at 3847-60 ft. Partnership's Holbert 1, situated 1½ miles to northeast and separated by a 4920-ft failure, was drilling dry Ellenburger at 4840 ft, checking about level with the dry hole that served as basis for the followup explorations.

NORTH TEXAS FIELD COMPLETIONS

Archer County—W. E. Production Co.'s Ebnother-Shell 4, 330 ft from e and 1510 ft from n lines blk 102, Harris subdiv, 18 bbls oil, 5 water, sand 1260-65 ft.

White & Duncan's Richardson 3, M. Laney sur A-1177, pump 27 bbls, sand 1233-37 ft.

W. C. Young-Burk Roy. Co.'s Richardson 1-B, 330 ft out NEc 60-ac lse, blk 17, J. Scott sur, abnd 1260 ft.

Baylor County: East Rendham—Jordan Pet. Co.'s Fayette-Omohundro 1, 5358 ft from n and 6435 ft from w lines Fayette CSL sur, pump 47 bbls oil, 84 water, acid 1000 gals Palo Pinto lime 3022-26 ft.

Clay County: Jolly-Ross—Continental et al's Ross 9, 2236 ft from n and 2529 ft from w lines sec 31, Wm. Walker sur, flow 243 bbls ½-in, acid 6000 gals Bend perf 5386-5444 ft, re-acid 2000 gals 5470-92 ft.

Clay County: Joy—Shell's Brock 1, 909 ft from s and 330 ft from e lines blk 30, H. Williams sur, Bend 5416 ft, Mississippi 5937 ft, flow 3192 bbls, ½-in, acid 2000 gals Miss 5949-6021 ft.

Clay County: Watson—Roy Lee, Tr.'s Watson 1-A, 2060 ft from e and 660 ft from n lines W. A. Farris sur, Bend 5224 ft, Ellenburger 6014 ft, flow 420 bbls, 3/16-in, acid 3000 gals Bend perf 5474-84 ft, td 6053 ft.

Cooke County—C & L Oil Co.'s Perkins 8-A, T. F. Bates sur A-41, abnd 1247 ft.

Jack County: Worsham-Steed—Paul Steed et al's Flowers 1, 3768 ft from s and 2800 ft from e lines Dan Crenshaw sur, pump 70

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Montague County: Clingingsmith — Sinclair Prairie's Fooshe 1, 660 ft out NWc blk 135, J. C. Mattison sur, flow 745 bbls, acid 2000 gals 5998-6050 ft.

Wichita County: Akin — Dimock-Costley's Hardin 2, 1258 ft from n and 1650 ft from w lines O. Farish sur, A-383, pump 10 bbls oil, 45 water, perf 1325-31 ft, td 1357 ft.

Jack & Henry Grace's Dorris 2, 4425 ft from n and 660 ft from e lines sec 4, HT&B-J. R. Burris sur, pump 8 bbls, sand 798-802 ft.

Burk Divide Oil Co.'s Red River-U. S. Dept. Interior 246, 1550 ft from n and 300 ft from e 8-5s-14w, jkd 2100 ft.

NORTH TEXAS WILDCAT COMPLETIONS

Archer County: Failure—Bridwell Oil Co.'s Wilson 1-G, 430 ft from n and 330 ft from w lines ATNCL 72, abnd 2350 ft.

W. C. Young-Burk Roy. Co.'s Thomas 1, 990 ft from w and 330 ft from s lines 160-ac lse, blk 132, Harris subdiv, abnd 1381 ft.

Jack County: Failure—Shell's Carter 1-A, 425 ft out nwc TE&L 3311, KMA lime 2492 ft, Bend 4540 ft. Barnett shale 5338 ft, Mississippi 5621 ft, Ellenburger 5625 ft, abnd 5725 ft.

NORTH TEXAS WILDCAT STARTS

Archer County—Bridwell Oil Co.'s Wilson 1-H, 990 ft from e and 330 ft from s lines ATNCL s 71, lcn.

H. S. Grace et al's Wear 1, 330 ft out swc blk 8, I. Holeman sur, lcn.

Craig & Wilson's Threet 1, 330 ft out swc e-107-ac of S. J. Williams sur A-786, 4 mi se Archer City, lcn.

Clay County—J. S. Youngblood-R. L. Foree's Sanzenbarcher-Gulf 1, 760 ft from n and 710 ft from w of w-80-ac blk 11, Orange CSL sur, 4½ mi sw Henrietta, lcn Ellenburger test.

Wilbarger County—W. T. Waggoner's Fee 1, 1320 ft from n and 660 ft from e lines J. S. Calhoun sur, lcn 4500-ft test.

Young County—S. D. Glover et al's Keithley 1, 990 ft from n and 330 ft from e lines sec 152, TE&L sur, lcn.

East Texas

Talco Deep Test Showing Favorable for Smackover

Talco field's deep test credited with cutting fault at favorable level to assure decisive verdict on production possibilities of Smackover lime. Cherokee County discovery resumes flow after additional perforations.

Franklin County: J. B. White et al's Jackson 1, north edge of Talco field, was drilling red and green shale at 7760 ft. It is reported to have cut fault at 7500-ft level, thus placing it in strategic position to determine ability of Smackover to produce. Top of Travis Peak was called near 7200-ft level, confirming 1400-ft displacement as compared to Ajo Corporation's nearby Travis Peak failure.

Cherokee County: Humble's Curtis 1, recent Larisha discovery, was flowing into pits while cleaning itself after adding 336 perforations opposite Pettit pay at 10,160-10,212 ft. It is to be acidized, although formation failed to take acid through original perforations at 10,160-12,200 ft.

Magnolia's Eraly 1, Mixon prospect, was drilling lime at 5880 ft in Georgetown topped 4886 ft.

Wood County: Magnolia's Robinson 1-B, east outpost for Coke field and its tenth flowing producer, flowed 93 bbls of oil on 2-hour gauge through 1-in tubing choke, from Paluxy perforations at 6304-20 ft, elevation 518 ft. Company's Robinson 1, southeast outpost, abandoned in Paluxy water sand at 6422-42 ft. General American Oil Co.'s Skeen 1, southwest edge of production, swabbed salt water from perforations, with hole bottomed at 6404 ft, and squeezed off to tap upper sand. Amerada's Kennemer 5, north offset to most westerly producer, is testing through perforations at 6299-6347 ft, with hole bottomed in oil sand at 6357 ft. Production trend is open to north along a 5-well front.

Smith County: Sinclair Prairie's Swinney 1, 2-mile south extension for Chapel Hill field, increased its production to 120 bbls of 40-gr oil on 24-hr test, swabbing and flowing 10 hours and used input gas the remainder of the period. Multi-stage treatment of acid was made through Pettit perforations at 8156-8280 ft. Sinclair Refining Co. is laying a 4400-ft (gravity) 4-in line, as more development is to follow on the company's large lease block.

Harrison County: British-American Oil Co. is moving in to drill Bell 1, Richard Hooper survey, a new Blossom sand wildcat, 1½ miles southwest of Hallsville. The objective is expected at 3000 ft. Pits have been dug for H. H. Temple's Barnes 1, Lindsey survey, projected Woodbine wildcat, 8 miles northeast of Hallsville.

EAST TEXAS FIELD COMPLETIONS

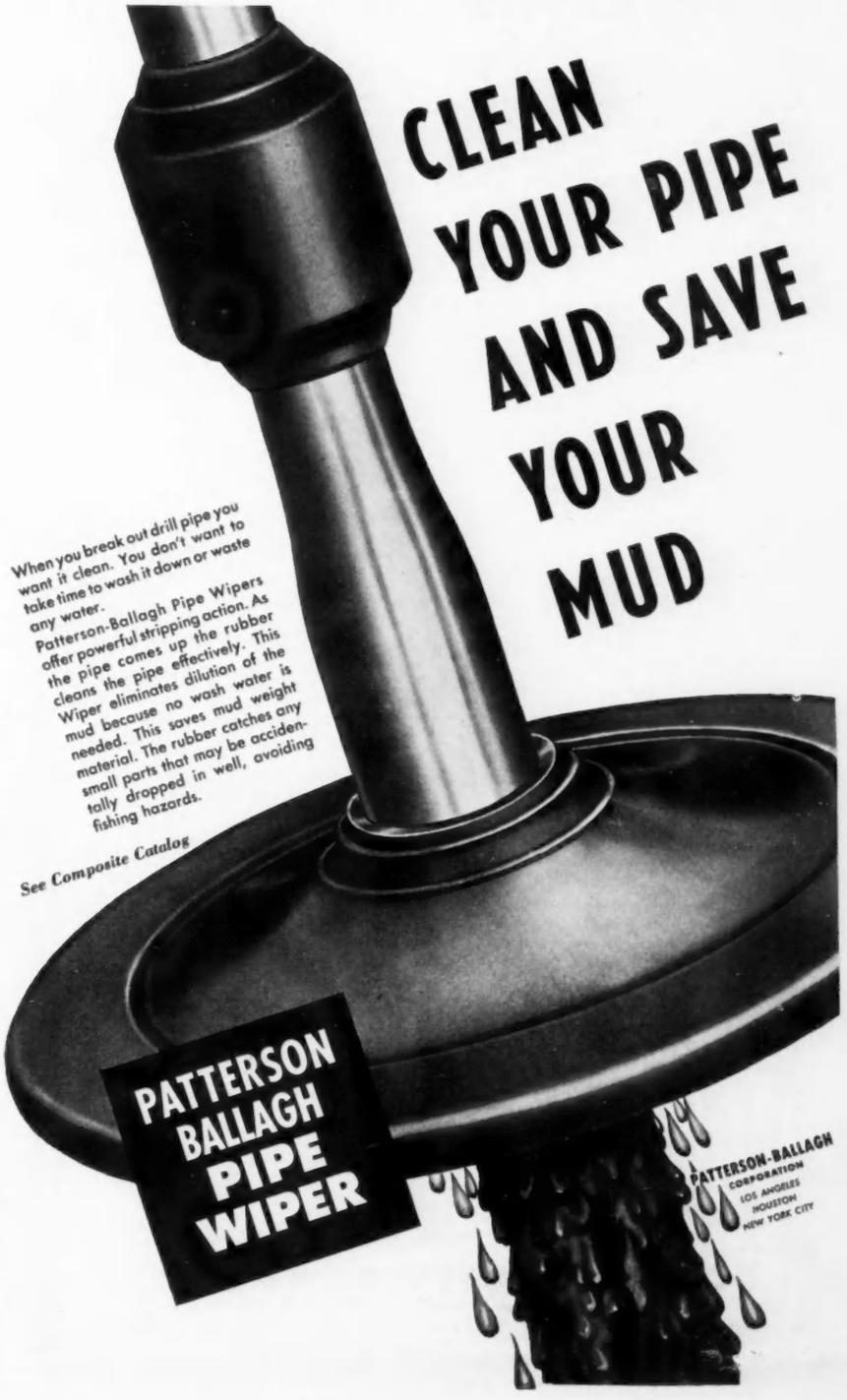
Hunt County: Wieland (Club Lake)—Harold D. Byrd et al's Wilson 1, 330 ft out SEc 50-ac lse, John Warren sur, elev 486 ft, Pecan 1083-1290 ft, top Austin 2498 ft, Woodbine water 2846-54 ft, abnd 2948 ft.

Wood County: Coke—Magnolia's Robinson 1, 735 ft from n and 525 ft from e & w lines 65.13-ac lse, Dan L. Townsend sur, elev 518 ft, top Georgetown 5230 ft, abnd Paluxy water sand 6422-42 ft.

Wood County: Hawkins—Humble's Cumbie 1-A, 507 ft from s and 467 ft from w lines 126.59-ac lse, H. M. N. McKnight sur, elev 385 ft, Pecan 3150-3363 ft, top Austin 4238 ft, top Woodbine water 4699 ft, abnd 4990 ft.

EAST TEXAS WILDCAT STARTS

Hunt County—B. D. K. Oil Co.'s N. T. Lawler 1, c of e-40-ac of 198-ac tr, T. R. Tennison sur, mile nw Dixon, lcn.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Southwest Texas

Two Wildcat Wells Find Show of Oil

Atascosa County wildcat finds oil shows in chalk while indications of new field found in Dimmitt County well. Buck Snag discovery reported making brackish water. Outpost well in Stewart field to test deep sand.

Atascosa County: Humble Oil & Refining Co. has been attempting to make drill stem test in Thompson 1, wildcat in Imogene area that showed for production in chalk. The well, located in block 19 of Dr. Charles F. Simmons subdivision, took a core at 7347-50 ft which showed saturated chalk. Further operations were delayed due to heavy rains and high water.

Dimmitt County: Humble is reported to have found oil shows in Edwards lime in Denton 1, wildcat in John W. Lilly survey 528 of Blas Reyes grant, 4 miles northeast of Asherton. These lime shows were found around 7744 ft, total depth, which is near top of Edwards. Operators tried to run drill-stem test at this level, but failed when a slip was lost.

Colorado County: Although detailed information has not been released, Shell Oil Co.'s discovery in Buck Snag area is reported to be flowing considerable brackish water along with oil. Operators recently opened this field, 4 miles southwest of Garwood, with completion of Schiurring 1 in perforations at 6140-45 ft. At last report it was flowing around 95 barrels of oil and 55 barrels of brackish water through ¼-in choke with 2100 pounds tubing pressure and 2150 pounds on casing.

Jackson County: W. Stewart Boyle is testing deeper sand in Meyer 2, outpost south of discovery well in Stewart field. Perforations were made in 6000-ft sand after 5½-in casing was cemented. This lower sand was logged at 6000-6021 ft, placing it about 56 ft lower than in the discovery producer. This sand flowed distillate in the discovery well.

SOUTHWEST TEXAS FIELD COMPLETIONS

Duval County: Conoco-Driscoll—Continental's Driscoll 7, 2800 ft fr nl & 4300 ft fr el U. Lott sur, 6-in 3000 ft, perf 2987-95 ft, flow 129 bbls, ¼-in, td 3000 ft.

Duval County: Kohler — Republic Natural Gas Co.'s Dinn 1, 660 ft fr sel's of n½ of sw J. Poitevent sur 665, 5½-in 2630 ft, perf 2479-81 ft, gas, no gauge, td 3000 ft.

Live Oak County: Oakville—Simmons Oil Co.'s Reagan 8, 1990 ft ne alg nwl of 244-ac tr, G. C. Coker sur, 5-in 2784 ft, perf 2776-79 ft, 17 bbls, ¼-in, td 2784 ft.

Starr County: North Sun—Sun's De la Garza 8, 1400 ft fr el & 3875 ft fr sl La Sal Colorado gr, 5½-in 4553½ ft, flow 149 bbls, 9/64-in, td 4555 ft.

SOUTHWEST TEXAS WILDCAT COMPLETIONS

Live Oak County: Failure—Brewer & Hixon's Jones 1, 3 mi ne Mt. Lucas gas field, 200-ac tr M. B. Kivlin sur, abnd 4433 ft.

Starr County: Failure—Humble's Coates 1, 3840-ac lse, C. V. Hamilton sur 623, abnd 4855 ft.

Starr County: Failure—Sun's Cortez 1, 140-ac lse, share 85, porcion 95, abnd 4620 ft.

SOUTHWEST TEXAS WILDCAT STARTS

Duval County—Texon Oil & Refining Co.'s Holzaphel 1, 386-ac lse, GWTP sur 178, lcn 1200-ft test.

SOUTH CENTRAL TEXAS WILDCAT COMPLETIONS

Williamson County: Failure—J. E. Schultz's Almquist 1, 108-ac tr Silas Palmer sur, 5 mi ne Hutto, abnd 1300 ft.

SOUTH CENTRAL TEXAS WILDCAT STARTS

LaSalle County—Magnolia's Burks Ranch 1, 330 ft fr s & 2446 ft fr el Antonio Herrera sur 263, lcn 6500-ft Wilcox test.

LOWER TEXAS COAST FIELD COMPLETIONS

Bee County: South Caesar—Atlantic's Cotton 2, 85-ac tr, Thomas Powell sur, A-267, abnd 6635 ft.

Continental's Fox 1, Charles Amsler sur, 176-ac tr, 5½-in 6623 ft, perf 6616-20 ft, flow 172 bbls, ¼-in, gor 675-1, td 6625 ft.

Luling Oil & Gas Co.'s Tom Slick 1, 552-ac lease, blk 11, W. F. Hodge sur, abnd 6860 ft.

Hidalgo County: Nichols—Royal Oil & Gas Co.'s Yturria Town 1, tr 10, 503-ac lse, perf 3666-73 ft, flow 98 bbls ⅛-in, td 3990 ft.

Jackson County: Harmon—Gulfboard's Harmon 1, 554 ft fr nl, 784 ft fr el A. Kountze sur 23, 5½-in 5447 ft, perf 5355-5408 ft, flow 221 bbls, 7/32-in, td 5455 ft.

Jackson County: Maurbro—Humble's Egg 2, blk 7, Benjamin White sur, 234-ac lse, 5½-in 5218 ft, sand 5228½ ft, flow 375 bbls, ¼-in, td 5238 ft.

Jackson County: West Ranch—Magnolia's West Ranch 239, 3350 ft fr el of 11,582-ac lse in Ramon Musquez grants, 5½-in 5590 ft, sand 5570 ft, perf 5570-80 ft, flow 110 bbls, 7/64-in, td 5590 ft.

Jackson County: Ganado—Texas Co.'s Silliman 4, 660 ft fr sl & 1980 ft fr el of 241-ac tr, Morris & Cummins sur 3, sand 6630 ft, 5½-in 6634 ft, perf 6630-33 ft, flow 190 bbls, ⅛-in, td 6635 ft.

Kleberg County: East Stratton — Chicago Corp.'s Wardner 47, 5413 ft s alg el 8782-ac lse fr ne cor sec 19, Charles Stratton subdn, 5½-in 6576 ft, perf 6360-68 ft & 6526-48 ft, dual sand distillate well, no gauge, td 6604 ft.

Chicago Corp.'s Wardner 49, East Stratton, 7280 ft s alg el of 8782-ac lse, Paso Ancho de Abajo gr, 5½-in 6604 ft, perf 6567-70 ft, 55 bbls 5/64-in, td 6604 ft.

Kleberg County: Seeligson—Humble's King Ranch-Cabeza 3, 1158 ft fr sl & 1980 ft fr wl A. G. King sur 50, 5½-in 6044 ft, sand 6027 ft, flow 158 bbls, ¼-in, td 6073 ft.

Kleberg County: East Stratton—Humble's King Ranch 17, 660 ft fr wl of 1350-ac tr in Paso Ancho de Abajo gr, 5½-in 6590 ft, 131 bbls, ⅛-in, td 6622 ft.

Nueces County: Agua Dulce—Richardson Petroleum Co.'s Guaranty Title 3, 510 ft fr el & 2130 ft fr sl of sec 305, F. Z. Bishop subdvn, Palo Alto gr, sand 6525 ft, perf 6530-35 ft, flow 142 bbls, ⅛-in, td 7210 ft.

Refugio County: Greta—Monday Oil Co.'s Heard 7, 1527 ft fr wl & 4811 ft fr sl of 425-ac lse, J. H. Peoples sur, 5½-in 4464 ft, perf 4402-08 ft, 58 bbls ⅛-in, td 4475 ft.

LOWER TEXAS COAST WILDCAT COMPLETIONS

Refugio County: Failure—Gray & Wolf's Hoffman 1, 2 mi se LaRosa, sec 16, Guadalupe Cobian gr, 320-ac lse, abnd 7008 ft.

Texas Gulf Coast

Lake Creek Extended; Sour Lake Gets New Sand

Lake Creek field, Montgomery County, extended 2½ miles northeast. New production opened on southeast flank Sour Lake field, Hardin County.

Montgomery County: Superior Oil Co. is rebuilding derrick and repairing rig following a blowout of Frost 1, wildcat 2½ miles northeast of nearest production on Lake Creek structure. The well, which is opening a new field or extending Lake Creek production from Wilcox sand, is now flowing 260 barrels of 46-gravity oil daily through 20/64-in choke from perforations at 11,508-533 ft, although operators will kill the well and attempt to complete it properly in the new sand.

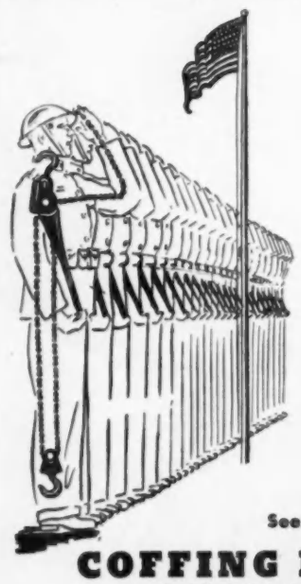
The well blew out while the testing tool was being pulled, and the top 7 joints of tubing came loose, blew out of the hole and upset the drill stem stacked in derrick. The derrick was torn down by the impact of the loose tubing and stacked drill pipe.

Pipe had been perforated at 11,508-533 ft for a drill-stem test that flowed 133 barrels in 12 hours through 20/64-in choke. Total depth is 13,293 ft with 7-in casing cemented at 13,074 ft in Wilcox.

On Willis prospect, George W. Strake is waiting on orders in Jones 1, wildcat bottomed at 8503 ft and a well that created quite a lease and royalty play. Electrical log was run to this depth. Operators have not announced what showings, if any, were encountered in Wilcox sand.

Hardin County: First activity in several years in old Sour Lake field was revived last week when Earl Hankamer et al's Hooks 1 opened production on southeast flank. Perforated at 2015-46 ft in Miocene sand, the well flowed 153 barrels of 20-gravity oil in 24 hours through 5/32-in choke with 300 pounds pressure on tubing and 800 pounds on casing.

Operators abandoned this well once at 3083 ft, but after electrical log was run and sidewall samples taken, decision was reached to set 7-in casing to make test. Perforations were made at 2199-2204 ft,



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2177-87 ft and 2151-56 ft for tests which showed some oil but failed to flow because of small amount of gas. Small tracts in this area have been pooled into drilling units.

Wildcats: George W. Strake has abandoned Florence & Parker 1, wildcat west of Aldine and in East Rosslyn section of Harris County. Pipe was perforated at 6594-6614 ft where a show of some oil and salt water was had.

Texas Co. is starting operations on Hamill 1, 10,000-ft wildcat in southeast corner Matagorda County in Sargent area. Several dry holes have been drilled in area but none went deep enough to test the lower sand formations.

Pan American Production Co. is preparing to drill Ekvall 1, 6000-ft wildcat 3 miles northwest of Louise in Wharton County. Pan American recently assembled this block, based upon subsurface information developed by abandoned wildcats.

TEXAS GULF COAST FIELD COMPLETIONS

Brazoria County: Danbury—Rowan Drilling Co.'s Davis 18, 330 ft fr nel of 1296-ac tr, Henry Austin sur, 5½-in 5824 ft, perf 5655 ft, 153 bbls, ⅛-in, td 6199 ft. Opens new sand.

Jefferson County: Lovell Lake—Humble's Jefferson Land Co. 29, 2313-ac lse, C. Hillebrandt sur, 5½-in 7773 ft, 99 bbls, ⅛-in, td 7790 ft.

Liberty County: Esperson—General Crude's City Investment Co. 1, 575 ft fr w & 520 ft fr most s'ly sl of 302-ac tr, GCSF sur 22, 5½-in 8567 ft, perf 8235-8490 ft, 323 bbls, ¼-in, td 8923 ft.

Wharton County: Withers — Texas Co.'s Pierce Est. 118, William Pettus sur, abnd 6525 ft.

Harris County: Alief — Pure's Siadous 2, 200-ac tr, Henry K. Lewis sur, abnd 8630 ft.

TEXAS GULF COAST WILDCAT COMPLETION

Wharton County: Failure — Temple Hargrove's Hartman 1, 446-ac tr, IGN 10, 5½-in 4036 ft, perf 3881-92 ft, gas, shut in no gauge, td 4036 ft.

TEXAS GULF COAST WILDCAT START

Matagorda County—Texas Co.'s Hamill 1, Sargent area, 11,082-ac tr, William Baxter sur, lcn 10,000-ft test.

Louisiana Gulf Coast

Pipe Set in Well on Newly Discovered Dome

Pipe set to test shows wildcat in St. Charles Parish after finding new salt dome. Wildcat on Rosedale prospect in Iberville Parish blows out. Outpost well in Lake Long field completed as producer.

St. Charles Parish: Gulf has discovered a new salt dome on Bayou Couba prospect and have set pipe in Delta Securities 1, 13-15s-21e. With the hole bottomed at 6917 ft in salt (topped at 6890 ft) production pipe has been set to test several sand sections that have indicated production. Last show was reported around 6528 ft. First indications of oil were found at 2210 ft with sand stringers being found to 5700 ft, and then more shows were found at 6842-64 ft. Best sand is reported around 5200 ft.

This new dome discovery is north of Lake Salvador field, owned by The Texas Co. and is 6 miles east of Bayou des Allemands field.

Iberville Parish: Amerada is completing fishing job on Angelloz 1, wildcat on Rosedale prospect, after blowing out from total depth of 10,426 ft and sticking drill pipe. Electrical log had not been run to test lower part of the hole when blowout occurred. This wildcat, in 41-7s-10e, also is in Grosse Tete area.

LaFourche Parish: Fohs, Shell and Pilgrim have completed an outpost producer in Lake Long field. Hotard 1 on south edge of field was perforated at 9404-09 ft and flowed 385 bbls through 3/16-in choke with 1225 pounds pressure on tubing and 550 pounds on casing.

St. James Parish: Cities Service and Skelly Oil Co. are resuming operations in Karstein 1, wildcat on St. James prospect. Hole is bottomed at 11,228 ft with no important shows reported. Last electrical log was run to 11,114 ft in shale.

St. Mary Parish: Humble is testing Miami 1, semi-wildcat 4500 ft east of Atlantic's St. Mary Parish Land Co. 4 in Bayou Sale field. Perforations were made at 10,345-352 ft with total depth of 11,102 ft. Plugged back depth is 10,355 ft. Shale with oil odors was logged at 10,320-376 ft. If a producer, this will be first major extension to this multiple-sand field.

Evangeline Parish: Emile Ludeau has abandoned Vidrine 1, semi-wildcat on south edge of Ville Platte field, failing to extend Wilcox production. Drilled to 10,305 ft, deeper than regular field producing horizon, did not top Wilcox, running 150 ft low at 10,100 ft.

SOUTH LOUISIANA FIELD COMPLETIONS

Evangeline Parish: Ville Platte — Continental's Ledeau-St. Landry 1-38, 44-3s-2e, 6-in 10,248 ft, perf 10,204-215 ft, flow 153 bbls, ⅛-in, td 10,248 ft.

Emilie Ledeau's Vidrine 1, 11-4s-2e, abnd 10,306 ft.

Iberville Parish: Whitecastle—Shell's Wilberts Sons 26, 13-11s-12e, abnd 7235 ft.

Plaquemines Parish: Grand Bay — Gulf's Grand Prairie Levee District 11, 55-20s-18e, 5½-in 7517 ft, perf 7402-08 ft, 203 bbls, 5/32-in, td 10,602 ft.

Plaquemines Parish: Venice—Tide Water's Buras Levee Dist. 18, 27-21s-30e, abnd 5780 ft.

St. Charles Parish: Paradis—Texas Co.'s LLE-Paradis 30, 40-14s-20e, 7-in 10,405 ft, perf 10,384-404 ft, 18s bbls, 5/64-in, td 10,405 ft.

North Louisiana

Concordia Parish Well Testing Under Lake

Winn Parish deep wildcat plugs back for production test. Well drilled under Lake St. John, Concordia Parish, by means of directional drilling, ready to test.

Winn Parish: H. L. Hunt's Goodpine F-24, SW SE 13-12n-5w, drilled to 9720 ft, the depth below 9000 ft with small bit for exploratory purposes only. Information has been withheld on this well and plug-back depth was not announced.

Concordia Parish: California Co.-Carter Oil Co.'s State Lease 476 No. 1, Section 15-9n-10e, drilled under Lake St. John by means of directional drilling, set 9⅝-in casing at 6553 ft. It will test the usual Wilcox level at 4500 ft. It would extend the new lakeshore field into the lake. Meantime E. C. Johnson staked Brown 1 in Section 4-9n-10e. The field now has six oil wells. California Co. was drilling at Applegate 3, 13-9n-10e, northernmost well, after killing gas blowout at 3000 ft. Standard Oil Co. of Louisiana is taking the oil, posting a price during the week of $1.35 per barrel for the one well producing from the 3500-ft level and $1.18 per barrel for the remaining production from the 4500-ft level, in the Wilcox.

Wildcats: H. L. Hunt staked new wildcats in Bienville, Catahoula and Bossier parishes during the week, all to be drilled to 6500 ft or deeper.

NORTH LOUISIANA FIELD COMPLETIONS

Claiborne Parish: Haynesville — Arkansas Fuel Oil Co.'s Sherman A-1, c ne sw 10-23n-8w, flow 386 bbls, 18/64-in, cp 900, tp 500, acidized 4000 gals, perf Pettit lime, 5280-96 ft, td 5400 ft.

Robert A. Stacy's Camp 1, c sw ne 24-23n-8w, flow 333 bbls, 12 hrs, 3/16-in, tp 500,

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NORTH LOUISIANA WILDCAT STARTS

Bienville Parish—H. L. Hunt's Southern Advance A-1, c se nw 11-16n-6w, moving in.

DeSoto Parish—Howard Youree's O'Neal 1, c nw ne 23-12n-15w, lcn.

Bossier Parish—Hunt Oil Co.'s Nebo 1, c sw se 3-23n-12w, lcn.

Catahoula Parish—Placid Oil Co.'s Burroughs 1, c se se 34-7n-6e, lcn.

Arkansas

Distillate Production Opened at Texarkana

Distillate field opened near Texarkana. Columbia County wildcat cores salt water. Union County wildcat finds salt water in Smackover lime.

Miller County: Carter Oil Co.'s Orr 1, C SE NW 3-16s-28w, on test through ⅛-in choke showed 1,800,000 cubic ft of gas and 61 bbls of distillate in 24 hrs, from perforations in Smackover lime at 7348 to 7405 ft, total depth being 7700 ft. Gravity is 71.3. Tubing pressure stood at 2590 pounds. Gas-oil ratio is about 31,000/1.

This wildcat opens a distillate field 2½ miles southeast of Texarkana city limits. It is located on Carter's "Texarkana Block" of 3500 acres. Carter has been the principal developer of the oil field at Fouke, also in Miller County.

Columbia County: Sinclair Prairie Oil Co.'s Souter 1, Section 15-17s-22w, topped Smackover lime at 8380 ft; cored 8380 to 8405 ft and recovered 14 ft showing salt water, but drilled ahead. The wildcat is west of the town of Magnolia.

Union County: Amerada's S. S. Turbeville 1, C SE SW 4-18s-12w, wildcat 2½ miles west of New London field, drilled into Smackover lime but showed water at 6100 ft. It was plugged back for a production test at 3200 ft.

ARKANSAS FIELD COMPLETIONS

Lafayette County: Midway—Frankel-Riddel Petroleum Corp.'s Stamps Land Co. 1, c se nw 17-15s-23w, abnd 6590 ft.

Barnsdall's McClain 4, c nw ne 13-15s-24w, flow 16 bbls hr, ¼-in, Smackover lime, 6450-65 ft, td 6465 ft.

Barnsdall's McClain 5, c ne ne 13-15s-24w, flow 16 bbls hr, ¼-in, Smackover lime, 6419-64 ft, td 6464 ft.

Arkansas Fuel Oil Co.'s Creek 1, c se se 9-15s-24w, flow 16 bbls hr, ¼-in, Smackover lime, 6420-74 ft, td 6474 ft.

Mississippi

Second Well at Cary Still Being Tested

Second well in Cary field still testing. Clarke County wildcat production test delayed.

Sharkey County: British - American Oil Producing Co.'s Houston 2, NW NW 23-11n-7w, second well in Cary field, on last gauges flowed 127 bbls of clean oil, 21 hrs, through ⅛-in tubing choke, with tubing pressure 295, casing 310; then in 3 hours flowed 18½ bbls per hour through 9/64-in tubing choke, 34 percent salt water and 4 percent bs; tp 235, cp 250; still testing.

Clarke County: Macro Drilling, Ltd.'s Long-Bell 1, SW SE SW 10-2n-16e, which showed oil on drill-stem test of Eutaw sand, ran casing but it parted before cementing and is fishing.

MISSISSIPPI WILDCAT COMPLETIONS

Issaquena County—Pres Cochrane's Anderson-Tulley 1, ne nw sw 17-17n-3e, Wilcox 2957 ft, Midway 5035 ft, gas rock 5500-5620 ft, Eutaw 5620 ft, abnd 6502 ft.

MISSISSIPPI WILDCAT STARTS

Adams County—Pure's McDowell 1, se 1-6n-4w, lcn.

Lamar County—Placid Oil Co.'s Batson 3, c sw nw 30-1n-16w, moving in rig.

Simpson County—Gulf's Wilbe 1, c e½ ne 5-2n-4e, moving in rig.

Rocky Mountain Area

North Dakota Prospects Dimmed by Failure

Carter Oil Co.'s deep North Dakota wildcat fails. Wertz field, Wyoming, extended mile northwest. Cut Bank extended south. Eastern Colorado test fails.

Wogansport Failure: Near Wogansport, Burleigh County, North Dakota, Carter's Semling 1, C SE SE 18-141n-81w, abandoned at 8850 ft in Pre-Cambrian beds. Several millions of acres of lands have been leased in the Dakotas during the past two years, and failure of the Carter test dims the outlook for wildcatting following the Dakota lease play.

Wertz: Sinclair Wyoming Oil Co.'s Unit 30-A, NE NW SE 1-26n-90w, Sweetwater County, Wyoming, extended the Wertz field, quarter of mile northwest, swabbing 775 barrels from Tensleep at 6116-6397 ft.

Cut Bank: McDonald, Henderson, Overcash's Reickoff 1, SE SE NE 36-32n-6w, extended Cut Bank field, Montana, a quarter mile south, swabbing 110 barrels. Well had main pay in Upper Cut Bank sand at 3040-3102 ft, td 3110 ft.

Colorado Failure: Another disappointment in search for oil in plains region of eastern Colorado, stratigraphically and structurally similar to the Mid-Continent region rather than the sharply folded Rocky Mountain region, is Stanolind's House 1, C SW NE 32-24s-41w, abandoned at 6200 ft, dry in the Arbuckle topped at 6130 ft. Rotary table elevation 3501 ft. Test located in Holly area, Prowers County, and 30 miles south of Stanolind's Snell 1, abandoned in January.

COLORADO COMPLETION

Prowers County: Holly Area—Stanolind's House 1, c sw ne 32-24s-41w, Permian 685 ft, Blaine 1080 ft, Anhydrite 1769 ft, Topeka 3290 ft, Lansing 3730 ft, Cherokee 4060 ft, Mississippian 5275 ft, Viola 5936 ft, Arbuckle 6130 ft, abnd 6200 ft.

WYOMING COMPLETIONS

Fremont County: Circle Ridge—Continental's Shoshone Indian Lease-766 6, cel ne ne ne 1-6n-3w, pump 325 bbls, Embar lime 1275 feet.

Niobrara County: Lance Creek—Continental's Apex-4 6, sw nw nw 35-36n-65w, swab 72 bbls, Basal Sundance 4014 ft, td 4086 ft.

Continental's Rodeo-4 2, sw sw sw 27-36n-65w, flow 300 bbls, 4040 ft.

Park County: Oregon Basin—Husky Refining Co.'s Neilson 2, nw nw sw 33-51n-100w, pump 285 bbls, Embar 3609 ft, td 3636 ft.

Ohio's Government 2, nw ne ne 32-51n-100w, pump 450 bbls, Embar 3615.

Ohio's Government 3, nw se ne 32-51n-100w, swab 300 bbls, Embar 3768 ft.

Ohio's Samuel 4, nw ne nw 32-51n-100w, pump 500 bbls, Embar 3615 ft.

Ohio's Haleen 3, nw se sw 29-51n-100w, flow 800 bbls, Embar 3597 ft.

Yale Petroleum Co.'s Government 3, nw sw nw 29-51n-100w, swab 480 bbls, Embar 3293 ft, td 3359 ft.

MONTANA COMPLETIONS

Glacier County: Cut Bank—Texas' Small 1, csl 12-35n-6w, 22.0 gas, 612 lbs rp, Cut Bank 2883-2915 ft, td 2921 ft.

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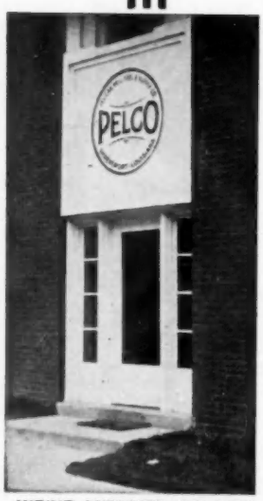

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Mecosta County Wildcat Promises Oil Producer

Thirteenth new field for year in prospect by wildcat in Mecosta County.

Mecosta County: Sun Oil Co.'s Murray 1, C S½ NW SW 5-16n-7w, Fork Township, showed 175,000 ft gas and 2100 ft oil in 5-in csg on 5-hr test, and was shut in for storage. This wildcat logged Dundee dolomite at 3813 ft with first gas and oil at 3816 ft with increase to 3818 ft. Well has 14 ft structure rise (sea elev 1068 ft) over old deep well in Section 9. If commercially productive would open first oil field in county, 9 miles southeast Evart pool.

Clare County: Pure Oil Co.'s McClain 1, E½ SE SE 30-20n-6w, first deep well in Winterfield pool, averaged 140 to 218 bbls day flowing 3 hr intervals last 7 days while being deepened in Sylvania horizon. Well logged Sylvania at 4928 ft, with first oil pay at 5028 ft. Now drilling at 5101 ft.

Gratiot County: Chartiers Oil Co. completed Church 1, NE SE NE 31-12n-3w, Pine River Township, for 49 bbls day under stiff choke to hold back water cut. Production from Dundee at 3284 ft. Well is a discovery in a near solid 2000-acre lease block held by Chartiers.

Ogemaw County: Weber Oil Co. bailed 6 bbls oil and 1 bailer water on production test of State F-1, Section 33-24n-2e, Foster Township. Pay logged in Monroe lime at 4029 ft. Ohio Oil Co. is to drill Grow 3, NE NE SW 35-22n-2e, in West Branch field, projected to Richfield lime between 3600-3800 ft.

MICHIGAN FIELD COMPLETIONS

Arenac County: Adams—E. G. Thompson's Hanggi 1, c se se 26-19n-3e, Monroe lime, pay 4220 ft, 8 bbls natural, flow 118 bbls after acid, td 4228 ft.

Ervin Major's McTaggart 1, ne sw ne 26-19n-3e, Monroe lime, so 4660 ft, abnd 4976 ft.

Bay County: Kawkawlin—Basin Oil Co.'s Prevost 2, n½ sw se 2-14n-4e, Dundee lime, pump 19 bbls, 2869 ft.

L. C. MacGregor's Stadacher 6, ne nw sw 2-14n-4e, Dundee lime, pump 22 bbls, 2905 ft.

Clare County: Winterfield—Taggart Bros. Co.'s Brown 122, c nw 17-20n-6w, abnd 1343 ft.

Taggart Bros. Co.'s Van Deussen 128, c sw 35-20n-6w, Stray sand, 2,600,000 gas, 1307 ft.

Missaukee County: Riverside—Taggart Bros. Co.'s Swan 30, c se 17-21n-7w, Stray sand, 160,000 gas, 1550 ft.

Osceola County: Reed City—Louis Rose's Fulmerhouser 1, n½ sw sw 4-17n-10w, Monroe lime, flow 209 bbls after acid 5 hrs, td 3533 ft.

Osceola County: Evart—Sun's Arndt 2, n¼ nw nw 26-18n-8w, Dundee lime, flow 414 bbls 18 hrs, 3724 ft.

Sun's Cook 2, n½ nw ne 27-18n-8w, Dundee lime, flow 219 bbls 22 hrs, 3782 ft.

Ottawa County: Zeeland—Perry's Nykamp 1, se ne ne 31-5n-14w, Traverse lime, flow 142 bbls, 1476 ft.

MICHIGAN WILDCAT COMPLETIONS

Allegan County: Failure—Fortney's Sawyer 1, ne se sw 24-3n-14w, Traverse 1497 ft, abnd 1523 ft.

Allegan County: Failure—J. J. McGerry's Horvath 1, sw sw ne 26-3n-11w, Traverse 1728 ft, abnd 1738 ft.

Gratiot County: Pine River Discovery—Chartiers Oil Co.'s Church 1, ne se ne 31-12n-3w, Dundee lime 3282 ft, pay 3283-84 ft, flow 163 bbls 4 hrs, 796 bbls oil and water 24 hrs, producing 2 bbls water free oil, 43.8-gravity, 475 lbs csg, 360 tubing pressure, net 49 bbls day, 3284 ft.

Montcalm County: Failure—American Production Co.'s Buchholz 1, sw ne sw 21-11n-7w, Marshall sand 1212 ft, abnd 1223 ft.

MICHIGAN WILDCAT STARTS

Allegan County—Sprenger Bros. Co.'s Pierce 1, s½ se nw 12-2n-12w, lcn.

Lenawee County—Adrian Gas & Oil Co.'s Dinius 1, se sw sw 24-6s-3e, dr.

California

30-Well Program in Shallow Kern County Area

Extensive Kern County shallow zone development launched at Belridge and Kern Front. Two Fresno County wildcats slated and one abandoned. San Benito County test fails.

Fresno County: Continental Oil Co. is scheduled to spud Drummond 1, wildcat in the Hanford area, 36-18-22, shortly. General Petroleum Corp. has started drilling Noble 88-9, wildcat in the Wheatville area 8 miles west of Helm field.

In the Kerman sector, Richfield Oil Corp. has abandoned Burns 1 after failing to pick up showings to 3736 ft.

Kern County: Ohio Oil Co., General Petroleum Corp. and E. A. Parkford, together with other companies, are preparing to drill 30 shallow wells in the South Belridge district where Parkford has been developing a heavy-oil sand at around 900 ft.

In the Kern Front field General has secured clearance from OPC for 8 shallow wells to bolster that area's output of heavy oil. Company is also undertaking additional development work at Mount Poso.

CALIFORNIA FIELD COMPLETIONS

Fresno County: Coalinga old field—Standard's No. 107-35A, 917 ft n, 2275 ft w sec 35-19-15, pump 102 bbls 19.2-gr, 108 ft perf 3034 ft, Kreyenhagen 3286 ft, td 3206 ft.

Fresno County: Raisin City—Shell's SA&FL 53-19, 1667 ft s, 2906 ft e nwc 19-15-18, flow 57 bbls 19.9-gr, 24/64-in, 22 ft perf 5120 ft, td 5260 ft.

Fresno County: Riverdale—Amerada's Jen-

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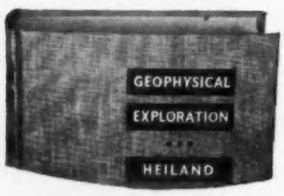

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sen 52-26, nw ne 26-17-19, flow 175 bbls 35.4-gr, 11/64-in, 600/0 lbs, Temblor 5572 ft, McLure 5315 ft, td 6840 ft.

Kern County: Belridge South — General's Marina 3-62, 760 ft s, 1744 ft e w¼ cor 3-29-21, pump 52 bbls 15.8-gr, perf 685-1053 ft, td 1142 ft.

Kern County: Buena Vista—Standard's 91-27B, 482 ft s, 2266 ft e w¼ cor 27-31-23, pump 156 bbls, perf 2694-2900, 3070-3105 ft, td 3113 ft.

Kern County: Fruitvale — Western Gulf's KCL-B 31, 1175 ft n, 1180 ft w s¼ c 14-29-27, pump 102 bbls 19.2-gr, 43 ft perf 3220 ft, Martin sand 3183, td 3253 ft.

Kern County: Greeley—Standard's KCL 11-34, 1650 ft s, 1650 ft w nec 18-29-26, flow 3340 bbls 35.2-gr, 40/64-in, 890/1340 lbs, 130 ft perf 11,509 ft, Rio Bravo 11,350 ft, Vedder 11,383 ft, td 11,510 ft.

Kern County: Midway-Sunset — Chansior Canfield's 42-22, 700 ft n, 1900 ft e s¼ cor 22-31-22, pump 5 bbls 11-gr, 261 ft perf 1729 ft, td 1813 ft, pd 1732 ft.

Kern County: Poso Creek—Standard's No. 13, 341 ft n, 986 ft w e¼ c 5-28-27, pump 55 bbls, 165 ft perf 2749 ft, td 2750 ft.

Kern County: Round Mountain — Shell's Caldwell 21, 297 ft n, 1497 ft e swc 7-28-29, pump 78 bbls, 39 ft perf 1757 ft, Vedder 1717 ft, td 1757 ft.

Orange County: Yorba Linda—Shell's Olinda Fee 4, 2402 ft n, 952 ft w c/l Citrus & Eureka sts, pump 138 bbls 18.3-gr, perf 2035-1810 ft, td 2040 ft.

Orange County: Huntington Beach—Standard's Huntington A-27, 955 ft nely along c/l 23rd from c/l Palm, thence 730 ft nwly at r/a, pump 182 bbls 19.2-gr, 407 ft perf 3608 ft, td 3657 ft.

Ventura County: Ventura Avenue—Shell's Taylor 146, 50 ft n, 3567 ft w c/l No. 11, flow 1988 bbls 29.2-gr, 28/64-in, 120/900 lbs, 457 ft perf 8767 ft, td 8769 ft.

CALIFORNIA WILDCAT COMPLETIONS

Fresno County, Mendota Area: Failure—Pure's CLG 1, nw nw 22-15-13, Kreyenhagen 4534 ft, base 5820 ft; Domengine 5825 ft, base 5910 ft; abnd 7000 ft in gray sand.

Kern County, Kern Front Area: Failure—Standard's 42-9, 990 ft s, 330 ft w n¼ cor 9-28-27, Vedder 5360 ft, basement rocks 6195 ft, perf 2625-2510 ft, abnd 6211 ft.

Kern County, McKittrick Area: Failure—Richfield's Lukas-Ninkovitch 1-A, 788 ft n, 2299 ft e swc 11-30-21, abnd 1136 ft.

Kern County, Round Mountain Area: Failure—Trico Oil & Gas Co.'s Coffee 10, 300 ft s nec w½ sw nw 8-28-29, Vedder 1645 ft, abnd 1736 ft.

CALIFORNIA WILDCAT STARTS

Butte County—Ohio's Willows-Black A-1, 18-20-2, lcn.

Los Angeles County—Caloga Oil Co.'s No. 1, 725 ft n, 350 ft w c/l Stag & Woodlake sts.

Eastern States

NEW YORK COMPLETIONS

Allegany County — R. B. Moore et al, Brocaw farm, Bolivar, 7 bbls, Richburg, 1266 ft.

Pure Penn Pet. Corp., Christman farm, Bolivar, 6 bbls, Richburg, 1522 ft.

South Bolivar Oil Co., McKelvey farm, Bolivar, 7 bbls, Richburg, 1340 ft.

Conklin & Reeland, Saunders farm, Wirt, Richburg, 6 bbls, 1224 ft.

Central Oil Co., Holtum farm, Scio, 9 bbls, Richburg, 1241 ft.

Ebenezer Oil Co., Vincent farm, Scio, 8 bbls, Richburg, 1175 ft.

Otsquago Oil Corp., Pike farm, Alma, 10 bbls, Richburg, 1439 ft.

Marsh Oil Co., Fay farm, Bolivar, 11 bbls, Richburg, 1435 ft.

South Hill Oil Co., Harrington farm, Wellsville, 6 bbls, Fulmer, 1348 ft.

H. W. Patterson et al, Browning farm, Scio, 6 bbls, Scio, 670 ft.

Max Andrews, Burdick farm, Wirt, 5 bbls, Richburg, 1360 ft.

Daggett Oil Co., Daggett farm, Genesee 8 bbls, Richburg, 1433 ft.

Messer Oil Co., Koehler farm, Clarksville, 8 bbls, Richburg, 1446 ft.

Otto Oil Co., Bartlett farm, Bolivar, 6 bbls, Richburg, 1325 ft.

Sloan & Zook Oil Co., Green farm, Genesee, 7 bbls, Richburg, 1358 ft.

A. L. Shaner, Parker farm, Bolivar, 6 bbls, Richburg, 1455 ft.

INTAKE WELLS

Allegany County—Mountain Oil Co., Hall farm, Bolivar, Waugh-Porter, 1581 ft.

New York Oil Co., Gadsby farm, Bolivar, Waugh-Porter, 1439 ft.

Bradley Prod. Corp., Russell farm, Alma, Richburg, 1380 ft.

Messer Oil Co., "M", E. Allen farm, Alma, Richburg, 1345 ft.

Otsquago Oil Co., Pike farm, Alma, Richburg, 1429 ft.

Brown & McEnroe, Witter farm, Alma, Richburg, 1342 ft.

Marsh Oil Co., Fay farm, Bolivar, Richburg, 1426 ft.

Pioneer Oil Co., Brandes farm, Wellsville, Fords Brook, 1374 ft.

Scio Oil & Gas Co., Simmerson farm, Scio, Scio, 855 ft.

Messer Oil Co., Bona Vista farm, Wellsville, Scio, 1056 ft.

Messer Oil Co., Koehler farm, Clarksville Richburg, 1439 ft.

Martin O'Connor Est., O'Connor farm, Genesee, Richburg, 1368 ft.

Healy Petroleum Co., Garthwait farm, Bolivar, Waugh-Porter, 1630 ft.

OHIO COMPLETIONS

Ashland County—Ohio Fuel's Bartley 1, 0.68 gas, 2682 ft.

Athens County—Mathews Oil Co.'s Rodenheaver 1, abnd 1410 ft.

Fairfield County—City Natural Gas Works' Klump 1, 0.12 gas, 2362 ft.

Holmes County—J. C. Moore's Campbell 1, abnd 784 ft.

Knox County—Ohio Fuel's McElroy 1, 0.2 gas, 2950 ft.

Licking County — National Drilling Co.'s Nethers 1, abnd 2800 ft.

Loraine County—Ohio Fuel's Harrington 1, 1.91 gas, 2625 ft.

Medina County—Ohio Fuel's Slocum 1, 0.75 gas, 3538 ft.

Belmont Quadrangle Drlg. Corp.'s Johnson 1, 0.01 gas, 3269 ft.

Meigs County—H. B. Walker's Person 3, 0.5 gas, 1627 ft.

Monroe County—Hall & Henning's Howell 1, 0.07 gas, 2090 ft.

Morgan County—J. L. Bachelor et al's Ross 3, abnd 610 ft.

Williams Bros.' Woodyard 1, abnd 1555 ft.

Muskingum County—Ohio Fuel's Powelson 1, 0.13 gas, 4114 ft.

Noble County—Harry Clymer's Cline 1, 0.03 gas, 1441 ft.

Perry County—Ohio Fuel's Coulter 1, 1.4 gas, 3867 ft.

Ohio Fuel's Williams 1, 0.64 gas, 2727 ft.

Ohio Fuel's Sunday Creek Coal Co. 212, abnd 1065 ft.

Preston Oil Co.'s Elmer Sivits 1, abnd 2792 ft.

Ohio Fuel Gas Co. et al's Milligan 1, 0.7 gas, 3625 ft.

Preston Oil Co.'s Sunday Creek Coal Co. 1837, 20 bbls, 3742 ft.

Richland County—Ohio Fuel's Culler 1, 0.15 gas, 2391 ft.

Summit County—H. C. Bishop's Erickson 1, 0.5 gas, 4363 ft.

Tuscarawas County—J. A. Upham's Stiffler 1, 0.26 gas, 5042 ft.

Washington County—Campbell et al's Pettis 1, 0.14 gas, 1514 ft.

Wayne County—Mehowa Oil & Gas' Kean 2, 75 bbls, 3243 ft.

OLD WELL DRILLED DEEPER

Athens County—Ohio Fuel's Campbell 3, abnd 1554 ft.

PENNSYLVANIA COMPLETIONS

Armstrong County—Shelocta Oil & Gas' McElwain 1, 0.16 gas, 3600 ft.

Clarion County—Owens-Illinois Glass Co.'s Fox 2, 0.16 gas, 974 ft.

Fayette County—Fayette County Gas Co.'s Rider 2, 0.23 gas, 2579 ft.

Greene County — Manufacturers Light & Heat Co.'s Fordyce 1, 0.26 gas, 3559 ft.

L. J. House Convex Glass Co.'s Gabler 2, 0.18 gas, 1662 ft.

Westmoreland County — People's Natural Gas Co.'s Sparker 2, 0.58 gas, 3002 ft.

WEST VIRGINIA COMPLETIONS

Boone County—South Penn Nat Gas Co.'s Yawkey-Freeman 72, 4 bbls, and 0.1 gas, 2648 ft.

Braxton County—Pittsburgh & W. Va. Gas Co.'s Carte 7861, abnd 2340 ft.

Calhoun County—W. V. Knight's Ferrell 1, 4 bbls, 2178 ft.

Guy Boggess Drlg. Co. et al's Conrad 1, abnd 2050 ft.

Clay County—Pittsburgh & W. Va. Gas Co.'s Elk River 7851, 0.13 gas, 2229 ft.

Gilmer County—C. S. Morris' Barnes 3, ⅛ bbl and 0.01 gas, 2088 ft.

Jackson County—United's Starcher 5100, 16.23 gas, 5200 ft.

Columbian Carbon Co.'s Hyre 2, 12.02 gas, 5043 ft.

W. Va. Gas Corp.'s Hill-Castro 1, 3.9 gas, 5090 ft.

Lewis County—Hope Natural Gas' Lovett 8610, 2.04 gas, 6997 ft.

Lincoln County—David Gas Co.'s Britton-Hill 2, 1.02 gas, 3831 ft.

Putnam County—Massey Oil & Gas Co.'s Edwards 1, 0.23 gas, 2150 ft.

Ritchie County—Hope Nat. Gas Co.'s Haddox 1, 0.2 gas, 2153 ft.

Upshur County—Pitts. & W. Va. Gas Co.'s Boran 7876, 0.08 gas, 4713 ft.

Wetzel County—Carnegie's Ney 5, 0.24 gas, 2064 ft.

OLD WELLS DRILLED DEEPER

Lincoln County—South Penn. Nat. Gas Co.'s Stephenson et al 4, 5 bbls, deepened from 1923 to 2531 ft.

Mingo County—Burning Creek Narrowbone Land Co.'s Fee 1, 0.07 gas, deepened from 3840 to 4003 ft.

Men in the Industry's News

J. R. MULVEY, chief accountant of Humble Oil & Refining Company's sales department, has been appointed assistant comptroller, according to an announcement by H. C. Wiess, Humble president.

Mulvey has had wide experience in accounting and statistical work. He was employed by Humble Oil & Refining Company in 1918 as a statistician and accountant for the sales department. Through successive promotions he was made chief accountant of the department in 1932, which position he has held to this date. Prior to his employment with Humble, he held positions in the accounting departments of Dixon Car Wheel Company, Southern Pacific Railroad and The Texas Company.

He was educated in Houston parochial schools, completing a course in business administration at St. Thomas College.

VICTOR McGOWEN, Sunray Oil Company, has been transferred to Allen, Oklahoma, from Oklahoma City.

PAUL McGIVERN, Baker Oil Tools, spoke before Purchasing Agents Association of Tulsa on "Oil Well Cementing" at the association's meeting September 8.

J. H. ABERNATHY, petroleum engineer, formerly with Sunray Oil Company at Oklahoma City, has succeeded A. D. Small as director of the engineering committee studying Wilcox reservoir conditions in the Oklahoma City pool. Small resigned to enter army service.

WAYNE WILSON, secondary recovery engineer for Phillips Petroleum Company, has transferred from Bartlesville to Claremore.

E. H. MOORE is to be the speaker at the opening meeting of the current season for Engineers Club of Tulsa, September 14.

P. H. PIGGOTT, land man for Phillips Petroleum Company, Wichita, has transfered to Oklahoma City with Robert Rood filling the vacated Kansas post.

BERT DINGLEY recently was elected president of Marmon - Herrington Company, Inc., Indianapolis, Indiana, A. W. Herrington, chairman of the board, has announced. Dingley previously was associated with Marmon and Stutz, pioneer auto manufacturers. During the World War he was chief inspector of Liberty Motors, stationed with the Nordyke and Marmon Company at Indianapolis.

C. V. HUMPHREYS, refinery engineer for Abasand Oils Limited since last March, has been appointed assistant general manager, Max W. Ball, president and managing director, has announced. Humphreys started his refinery experience with Standard of Indiana immediately on leaving college, and later went with Imperial Oil Limited, holding successively the position of assistant superintendent of the Ioco plant, superintendent of the refinery and cracking departments at Sarnia, and assistant general superintendent of the Halifax plant. He left Imperial to join the staff of M. W. Kellogg & Company, and from 1932 until March, 1942, he was in consulting practice in Winnipeg, designing and building plants in the Prairie Provinces of Canada and adjacent parts of the United States.

J. E. B. GIBBONS has been appointed special representative to the oil and gas industry for the Wailes Dove - Hermiston Corporation, Westfield, New Jersey, according to an announcement by W. H. T. Thornhill, vice president. Gibbons formerly was associated with Dresser Manufacturing Company, and Victaulic Company of America.

S. F. SHAW, petroleum engineer of San Antonio, Texas, described new methods of raising oil and water from wells by the combination air-lift methods before the Compressed Air Institute of New York recently.

R. J. LAIDLAW has been appointed manager of Cleveland office of Worthington Pump and Machinery Corporation. He has been connected with Worthington since he returned from overseas military duty in 1919.

PAUL F. RUTLEDGE, former president of Sovereign Oil Corporation, Dallas, has been appointed deputy director of priorities and materials for Texas, Oklahoma and Louisiana. He had served in the War Production Board's Dallas branch as a priorities and inventory analyst since last May.

AL H. WADSWORTH, JR., West Texas scout for The Texas Company, Midland, has joined the United States Army Engineers.

CLARENCE GLASGOW, chief engineer for National Tank Company, Tulsa, has been named chairman of the Mid-Continent Division of ASME.

MARK MILSTEIN, consulting geophysicist of Toronto, Canada, has opened a New York office at 489 Fifth Avenue.

M. A. SHERWOOD, secretary, has announced a meeting of the Illinois Basin Chapter of the API, at 6:30 p.m. on September 17, at the Emerson Hotel, Mt. Vernon, Illinois.

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Squeaks from the Bull Wheel

Axis Bridge

The Axis leaders were playing contract in Hitler's mountain retreat.

"Three diamonds," said Goering.

"No bid," said Goebbels.

"Five diamonds," said Von Ribbentrop.

"One club," said Schickelgruber.

"Pass."

"Pass."

"Pass."

Last Resort

On the rifle range the recruits were trying hard, but getting exactly nowhere. At 500 feet, no hits; at 300, no hits; at 200, no hits! When all had missed at the shortest range, the sergeant was fit to be tied. He scratched his head and swore softly to himself. Suddenly a gleam of hope came into his eyes.

"Squad attention!" he shouted. "Fix bayonets! Char-r-ge!"

Rookie Stuff

"Why did you salute that truck driver?"

"Don't be so dumb! That's no truck driver, that's General Hauling. Didn't you see the sign?"

Plain Enough

What is your little brother's name?

His name would be Jack if he was my brother, but he ain't and her name is Sally.

He Should Know

A group of women in a tearoom became incensed with the service. Finally they called the proprietor and complained over the indifference of their waitress. "Why," said one woman, "she's as mean as she can be."

"She is, indeed, Madam," sighed the proprietor. "I know her well. She's my wife."

At the Exhibit

"Don't you think this is a rare bit of art?"

"Yes, 'rare' is the word. It certainly isn't well done."

Say "Ah"

Doctor: "Wait a minute. You are too quick; I didn't tell you to say 'ah'."

Patient: "I know you didn't. I just caught a glimpse of your new nurse."

Just Fate

"Where did you get that watch, Scotty?"

"I took a Heinie prisoner who was wearing yon watch. 'Will you gie me it?' I asked. He shookit his head. I eskit him a second time, and he shook his head again. 'For the third and last time as a gentleman,' I says, 'will you gie me that watch?' Heinie shookit his head."

"But you got the watch."

"Ah, weel, after that I simply inherited it."

Yankee Wit

A tourist stopped at a New Hampshire farmhouse, nestling against one of those rocky hills, to ask for a drink of water. "Fine corn," he said politely, waving to a hillside bearing scant stalks.

"Best in New Hampshire," replied the farmer.

"But how do you plow that hill? It's pretty steep?"

"Don't plow it. The spring thaws bring down stones that tear it up so we can plant the corn."

"How do you plant it?"

"Don't really plant it. I stand in the back door and shoot the seed in with a shotgun."

"Is that the truth!"

"Of course not. That's conversation."

Experienced

"Thank you, madam," said the lawyer at the end of a long cross-examination. "I hope I haven't troubled you unduly with all those questions."

"Not at all," replied the witness. "I have several small children at home."

Naughty, Naughty

Breathes there a man with soul so dead,
Who never hath turned his head and said:
"Hummmmm, not bad!"

Abundant Sunshine

"And you mean to tell me that in your section of California you have 365 days of sunshine a year?"

"Exactly so, sir, and that's a mighty conservative estimate, too."

What's My Name?

I don't know why the men grumble. This soup is really excellent.

They wouldn't grumble, sir, if the cook would admit it was soup. But he insists it's coffee.

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(Sixth Edition)

If you have studied in Great Britain, you know of it. If you have not studied there you will scarcely believe what follows!

IMAGINE that you are asked to design or find a certain type of gear, valve bearing, automatic cut-off, condensing, cooling or spraying system. Time is limited. Suppose that in twenty minutes you could produce ten or twenty definite, time tested working plans. Suppose you could do the same on many other similar problems. YOUR ASSOCIATES WOULD CONSIDER YOU A WIZARD!

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Notes for the Equipment Buyer and User

Weight Elevator

BYRON JACKSON COMPANY

The Byron Jackson Company has announced that for wells of average depth the BJ type MG elevator is now available for handling 75-ton loads, this being termed "medium" service. Previously either the type LG (with rated capacity of 20 tons) or the type G (with rated capacity from 125 to 175 tons) were used for this "in between" service.

This new elevator handles 18-degree external upset drill pipe, without the use of lifting plugs, lifting the pipe by the external upset, and not under the shoulder of 90-degree tool joints. This is accomplished by boring the elevator to fit the contour of pipe having the standard 18-degree taper, and providing a strong stirrup-type latch which joins the two halves of the body to resist the wedging action imposed by the external upset.

BJ Elevator

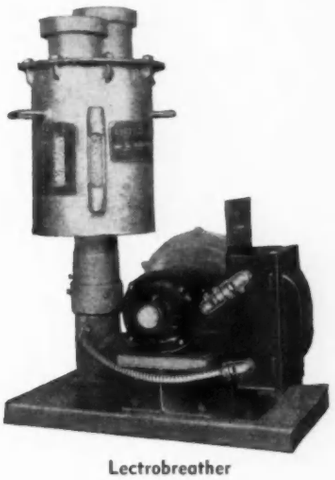
Another important innovation is a rubber balancing strap which holds the elevator in open horizontal position, but does not prevent easy closing. This balancing strap is readily attached not only to the type MG elevator, but to all types of BJ center-latch elevators. Additional features, including a sturdy latch lock to prevent horizontal impact from opening the latch, a quick and adequate means for thorough lubrication, and curved link blocks which permit ease of elevator operation, may be secured from Los Angeles, Houston or New York.

Lectrobreathers

PITTSBURGH LECTRODRYER CORPORATION

Lectrobreathers, developed by Pittsburgh Lectrodryer Corporation, 1070 32nd Street, Pittsburgh, Pennsylvania, are used to prevent the entrance of atmospheric moisture into oil and chemical tanks.

Lectrobreathers permit only dry air to enter the tank when it is emptied or when air enters due to temperature drops. Air leaving the tank, being thoroughly dry, has a partial reactivating effect which makes possible long periods between reactivations. They are



Lectrobreather

mounted either directly on the tank or piped to it and are equipped with a color indicator for determining when reactivation is needed or when it is complete. Where lectrobreathers are required for several tanks, the standard practice is to use one lectrobreather on each tank and a central reactivator for all breathers. The reactivators are built for electric operation as standard for all units or for steam operation on the two larger units. Special lectrobreathers are available for use on transformers or other equipment where atmospheric moisture is harmful.

Lectrobreathers use activated aluminas, which are dependable, time-tested adsorbents. They operate on the same principle as lectrodryer equipment which is successfully used in many industries for drying compressed air, gases and for maintaining lower than normal relative humidities in rooms. Complete information will be furnished on request.

Cement

Pennsylvania Salt Manufacturing Company, Philadelphia, Pennsylvania, chemicals, is announcing the issue of booklet No. 6 on Penchlor Acid-Proof Cement, available to interested companies on request.

Compressor

CLARK BROS. COMPANY

Clark Bros. Company, Olean, New York, has announced development of a Clark "Angle" compressor driven by steam, and built in units up to 4000 horsepower. One of the new 8-cylinder 4000-horsepower steam-driven units equals in capacity a battery of 10 of the 4-cylinder 400-horsepower gas-driven "Angles."

The war has greatly augmented industry's demand for compressor capacity, and Clark "Angles," both in the gas-driven models up to 1000-horsepower and the steam-driven up to 4000-horsepower are in constant demand for many new services, the company says.

Among the purposes for which Clark "Angles" are being installed are natural-gasoline recovery, high-octane gasoline manufacture, gas recycling, distillate recovery, gas boosting, oil refining, pressure maintenance, gas liquefaction, gas distribution, manufacture of synthetic ammonia, synthetic alcohol, toluene, oxygen, helium, magnesium, carbon dioxide, and other gases and chemicals, synthetic rubber manufacture, water flooding, generator drive, refrigeration, air compression for glass plants, rock quarries, mines, foundries, machine shops, tank, plane, aluminum, and steel plants.

The steady growth in industry's need for compressor plants of large capacity has led Clark to constantly study the problem of developing larger units in this field, it was explained.

Emsco Completes New Building Program at Houston Plant

Emsco Derrick & Equipment Company recently completed a building program for its Houston branch which serves the Gulf Coast and Mid-Continent trade.

Construction started in the early part of 1941. The two-storied new office building is of reinforced pan joist construction with reinforced concrete foundations. The exterior is of Cordova cream limestone.

Including 10 private and 5 general offices, and large structural and mechanical engineering drafting rooms, the

Emsco Derrick & Equipment Company's new plant at Houston

building is efficient as well as beautiful. Glass block windows on all four sides furnish an abundance of light. Rock wool insulation helps the air conditioning system in keeping the office warm in winter and cool in summer.

The personnel building and gas station were completed during the early part of this year. The personnel building is of reinforced concrete and brick and includes a first-aid room, shower and wash room, and locker room. The gas station building provides a storage room for general gas station supplies, wash rack, grease rack, and truck parking.

The machine warehouse has a galvanized framework covered with galvanized corrugated sheet iron and the floors are reinforced concrete. Lighting is improved with mercury vapor fixtures.

At the present time, work is under way on a central tool crib and tool room.

To improve shop office facilities, three new offices were erected, for the plant superintendent, the production department, the shipping department. These buildings are made of prefabricated steel and are equipped with circulating ventilation and fluorescent lighting.

The expansion and improvement program in the galvanizing plant has recently been completed. To provide greater capacity and a general pickling for the galvanizing kettles two extensions were built on the present galvanizing building. The building is constructed of a galvanized steel framework, corrugated sheet iron siding, and an asphalt built-up roof over wood sheathing. To improve efficiency, the equipment was entirely rearranged. Two galvanizing kettles were installed, one containing approximately 131,000 pounds of zinc and the other approximately 225,000 pounds. The small kettle is a replacement but the large one is an addition to the previous facilities. Additional electrically operated cranes are provided for use over the new kettle.

The changes and the improvements of the past two years make the Emsco Derrick & Equipment Company's Houston plant one of the most modern manufacturing establishments on the Gulf Coast.

Rinehart Issues New Book On Wilcox Wells in Texas

Rinehart Oil News Company of Texas has issued "The Wilcox Trend in Texas," which is a study of the Wilcox sand in Coastal areas. The book, which contains 82 mimeographed pages, indexes all Wilcox wells by counties.

It also takes up acid treatment of the Wilcox, a comparatively new practice, and discusses core analysis of this sand. A porosity and permeability chart is included. Included with the book is a map which spots the wells, totaling 399, to June 15, 1942.

V-Belt Care

Allis-Chalmers Manufacturing Company, Milwaukee, has issued a new handbook on "Plain Facts on Wartime Care of Rubber V-belts" which aims to make complete sense of the entire V-belt maintenance story.

This new book applies to all makes of V-belts, contains no advertising and is available without charge on request to Allis-Chalmers.

Advertisers' Index

• Indicates detailed information on products and services included in 1942 edition of COMPOSITE CATALOG OF OIL FIELD AND PIPE-LINE EQUIPMENT.

*Abercrombie Pump Co. —
*Acme Fishing Tool Co. —
Air Reduction Sales Co. —
*Ajax Iron Works —
The Louis Allis Co. —
Aluminum Company of America —
Aluminum Ore Co. —
American Association of Petroleum Geologists —
*American Cable Division, American Chain & Cable Co. —
American Hotel Association 67
*American Iron & Machine Works Co. —
*American Meter Co. —
*American Sand-Banum Co. 69
*American Steel & Wire Co. —
Axelson Manufacturing Co. —
*B & W, Inc. —
*Baash-Ross Tool Co. —
*Baker Oil Tools, Inc. —
*Baldwin-Duckworth Division, Chain Belt Co. —
*Baroid Sales Division, National Lead Co. —
Wm. M. Barret, Inc. 68
*Bethlehem Steel Co. —
*Bethlehem Supply Co. —
*Black, Sivalls & Bryson, Inc. —
Black Construction Co. —
*S. R. Bowen Co. —
*Bowen Co. of Texas, Inc. —
*Braden Steel Corp. —
*The Brewster Co. —
*Broderick & Bascom Rope Co. —
*The Buckeye Traction Ditcher Co. —
*The Buda Co. —
*Butler Manufacturing Co. —
*Byron Jackson Co. —
Jo H. Cable —
*Cameron Iron Works, Inc. IV Cover
*Cardwell Manufacturing Co. 21
*Caterpillar Tractor Co. —
*Chain Belt Co. 27
*Clark Bros. Co. —
*Climax Molybdenum Co. —
*Coffing Hoist Co. 64
Columbia Steel Co. —
*Columbian Steel Tank Co. —
The Continental Oil Co. —
The Continental Supply Co. —
*Fred E. Cooper —
*The Cooper-Bessemer Corp. 35
Core Laboratories, Inc. —
W. H. Curtin & Co., Inc. —
O. E. Dempsey Construction Co. —
*Dowell Incorporated 6
*E. I. du Pont de Nemours & Co. —
The Eagle-Picher Lead Co. 38
Economy Electric Lantern Co. —
*Elastic Stop Nut Corp. —
Emsco Derrick & Equipment Co. 29
Federal Electric Co. —
First National Bank in Houston —
*The Edwin H. Fitler Co. —
Fluid Packed Pump Co. —
Fort Worth Clearing House Association —
Fort Worth Laboratories 68
*Franks Manufacturing Co. —
*Frick-Reid Supply Corp. —
*Gardner-Denver Co. —
*The Garlock Packing Co. —
*Gaso Pump & Burner Manufacturing Co. —
The Gates Rubber Co. —
*Gatke Corp. —
General American Transportation Corp. 2
*General Electric Co. 36-37
*The Goodyear Tire & Rubber Co. —
*H. P. Gott Manufacturing Co. 70
I. H. Grancell Co. 61
*Grizzly Manufacturing Co. —
*The Gulberson Corp. —
*Gulf Coast Machine & Supply Co. 62
Gulf Engineering Co. 69
Gulf Oil Corp. —
Gulf States Utilities Co. —
*Halliburton Oil Well Cementing Co. —
W. G. Hanrahan —
*Haynes Stellite Co. —
*Hazard Wire Rope Division, American Chain & Cable Co. III Cover
Hercules Powder Co. —
*Hewitt Rubber Corp. —
Houston Laboratories 68
*Hughes Tool Co. I Cover
Humble Oil & Refining Co. —
*Hunt Tool Co. —
Independent Exploration Co. 25
*Ingersoll-Rand Co. —
The International Nickel Co. —
Jarecki Manufacturing Co. —
*The Jeffrey Manufacturing Co. 51
Jensen Bros. Manufacturing Co. —
*Johns-Manville Corp. —
The S. M. Jones Co. —
*Jones & Laughlin Steel Corp. 3
*Justrite Manufacturing Co. —
*Kerotest Manufacturing Co. —
*Keuffel & Esser Co. —
*Kinzbach Tool Co. —
*Kobe, Inc. —
Landis Machine Co. —
*Lane-Wells Company —
*Larkin Packer Co. —
Lebanon Steel Foundry —
*Le Roi Co. 52
*A. Leschen & Sons Rope Co. 33
*Link-Belt Co. —
Lone Star Cement Corp. —
*Lucey Boiler & Manufacturing Co. —
*Lucey Export Corp. —
*Lucey Products Corp. —
*The Ludlow Valve Manufacturing Co. —
Macklin Co. —
Macwhyte Co. —
Magnet Cove Barium Corp. —
Mark Twain Hotel —
Marmon-Herrington Co. —
*Martin-Decker Corp. —
*McCullough Tool Co. —
*McEvoy Co. 56
*McKissick Products Corp. —
*Merco Nordstrom Valve Co. Insert, 40-41
*Metric Metal Works —
*Mission Manufacturing Co. —
*Morse Chain Co. —
Murphy Diesel Co. 19
National Bank of Tulsa —
National Geophysical Co. —
National Hotels —
*National Lead Co. —
The National Supply Co. 22-23
National Tube Co. —
New Bedford Cordage Co. 51
Nicholson File Co. —
*The O. C. S. Manufacturing Co. —
*Oil Center Tool Co. —
*Oil City Brass Works —
Oil Industry Mailing List Co. —
Oil Well Supply Co. 31
*Otis Pressure Control, Inc. —
*The Parkersburg Rig & Reel Co. —
*Patterson-Ballagh Corp. 63
*Pelican Well Tool & Supply Co. 66
Petroleum Electric Power Association —
Petroleum Rectifying Company of California —
*Pittsburgh Equitable Meter Co. Insert, 40-41
*Pittsburgh Steel Co. —
*Plymouth Cordage Co. —
Power Specialty Co. —
*Quaker Rubber Corp. —
*Raybestos-Manhattan, Inc. 44
Reading-Pratt & Cady Division, American Chain & Cable Co. —
*Rector Well Equipment Co. —
*Reed Roller Bit Co. 39
Reforma Hotel —
Republic National Bank in Dallas —
Republic Steel Corp. 5
*The Ridge Tool Co. 4
*John A. Roebling's Sons Co. —
*Rollway Bearing Co. 49
Rouse Exploration Drilling Co. —
*SKF Industries, Inc. —
*Schlumberger Well Surveying Co. —
The Second National Bank in Houston —
Seismic Explorations, Inc. —
Seismograph Service Corp. —
Shell Development Co. —
A. O. Smith Corp. —
*Southern Mill & Manufacturing Co. —
*Spang & Co. —
Spang Chalfant, Inc. —
*Sperry-Sun Well Surveying Co. —
*Standco Brake Lining Co. —
Tank Seal Products Co. —
Texaco Development Corp. —
*Texas & Louisiana Tool Co. —
*Texasteel Manufacturing Co. —
*Texsteam Corp. —
The Thermoid Co. II Cover
*Thompson Tool Co. —
*Thornhill-Craver Co. 69
Treasury Department 59
*Tretolite Co. 8
*Union Carbide and Carbon Corp. —
*Union Wire Rope Corp. —
*Unit Rig & Equipment Co. —
United States Steel Corp. 31
*Universal Atlas Cement Corp. —
Valley Steel Products Co. —
Visco Products Co. 1
Warner & Swasey Co. —
Warren Automatic Tool Co. —
Waugh Laboratories —
*Waukesha Motor Co. 43
*Westinghouse Electric & Mfg. Co. —
*The Wheland Co. —
White-Plaza Hotels 68
*The Whitney Chain & Manufacturing Co. —
Whitney National Bank —
*Wickwire Spencer Steel Co. —
*J. H. Williams & Co. —
*Wilson Manufacturing Co. —
Wilson Supply Co. —
*Wisconsin Motor Corp. —
*Worthington Pump & Machinery Corp. —
Wyatt Metal & Boiler Works —
York Oilfield Supply Co. —
The Youngstown Sheet & Tube Co. —